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Pennsylvania

Colonial and Federal

A HISTORY : : : 1608-1903

Editor HOWARD M. JENKINS

Volume Three

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Pennsylvania

Colonial and Federal

CHAPTER I.

THE EDUCATIONAL SYSTEM

TO do justice to the early settlers of Pennsylvania it is necessary to bear in mind that education is of two kinds, that which is given at school, and that which is given out of school.

The education which is given out of school prevails among all classes of people. The struggle for existence imposes even upon savage tribes the necessity of transmitting certain kinds of knowledge from generation to generation. So primitive an art as that of building a fire (to us so simple by reason of the progress of invention), was for the aborigines of America and for the early settlers of Pennsylvania a problem involving knowledge, labor and skill. How to get food, where and how to fish, the making of weapons for the hunt and for war, the habits, migrations and feeding-places of birds and other animals, constituted a body of information which the young could and did largely acquire from those older and more experienced.

The education which is given out of school as a preparation for adult life must date back to the earliest pre-historic races who dwelt along streams or in the forests. It was surely not neglected by the first settlers of Pennsylvania. How to keep body and soul together in a wilderness where they had to face savage foes and adverse forces in the domain of nature, was the difficult problem that confronted our forefathers. The need of food, clothing and shelter at first claimed supreme attention. Every family was a little world in itself. The growing of grain, vegetables, cattle and poultry for food, of flax and wool for garments, occupied the time of the parents and children. It was mainly a process of education out of school that occupied the time of the boys and girls. As agriculture was then carried on in Pennsylvania, the school was of very little assistance in bread-winning. The ambition of the early settlers was to give every son a farm. The main motive which led them to establish schools was not found in their daily occupations. Reading and sewing were valued for girls, and reading, writing and ciphering for boys, as necessary for life's duties, but the chief incentive to the employment of teachers must be sought in a realm outside of secular occupations. This was, in many cases, a religious motive.

The school history of Pennsylvania falls naturally into four sections. The first deals with education in the colonial period, The second treats of education during and after the revolution, including the struggle for free schools. The third discusses the educational revival, including an account of the condition and forces that led to the legislation providing for the county superintendency, State Normal schools and a separate school department. The fourth is devoted to the further legislation that was needed to perfect the system of public instruction, and to a brief account of high schools and the other institutions of higher learning.

Colonial Education.—The first settlement on Pennsylvania soil was made by the Swedes. They were members of the Lutheran church and felt it to be their duty to give every child enough schooling to enable it to learn the catechism, to read the Scriptures and to sing the hymns used in divine worship. On the Delaware, this requirement was, no doubt, carried into effect as fully as circumstances would permit. If no schoolmaster was to be had, the minister himself assumed the duty of instructing the children. If they lived so far apart that they could not be gathered into the church or some other suitable building, the schoolmaster taught them in their homes. The court at Upland contains the record of a successful action brought in 1679 by Edmund Draufton, for two hundred "gilders," against Dunck Williams for one year's service in teaching the children of the latter to read. He is the first school teacher on Pennsylvania soil of whom we have any knowledge. In 1693 thirty of the Swedish settlers sent a letter to John Thelin, postmaster at Gottenburg, Sweden, in which they express their longing desire and hope for two Swedish ministers and the following books: Twelve Bibles, three copies of sermons, forty-two manuals, one hundred handbooks and spiritual meditations, two hundred catechisms, and two hundred A-B-C books. In 1696 four hundred catechisms were sent from Sweden to America. In one instance the colonists offered to pay for the books if lost on the voyage

The settlers from Holland were accustomed to schools supported by taxation. "Neither the perils of war," says Brodhead, "nor the busy pursuits of gain, nor the excitement of political strife ever caused the Dutch to neglect the duty of educating their offspring to enjoy that moral freedom for which the fathers had fought."

William Penn had views on education far in advance of the age in which he lived. He believed in education as necessary to good government: "That which makes a good constitution must keep it, viz.: Men of wisdom and virtue; qualities, that because they descended not with worldly inheritance, must be carefully propagated by a virtuous education of youth." These words are from the preface of Penn's Frame of Government, written early in 1682. In the same document it is provided that "the Governor and Provincial Council shall erect and order all public schools, and encourage and reward the authors of useful science and laudable inventions." A committee of manners, education and arts was to be appointed to prevent wicked and scandalous living and to see to it that "youth may be successively trained up in virtue and useful knowledge and the arts." Penn aimed to lay the foundation for a system of industrial education. One of the

Old Eight Square School House

Diamond Rock. Photo by J. F. Sachse

enactments of the second assembly, which met at Philadelphia in 1683, explicitly provided for a general system of instruction. There is evidence that this law was enforced. It was not merely a step in the direction of industrial education, but an attempt to banish illiteracy and to make ignorance impossible, ante-dating our compulsory school laws by two centuries.

Another enactment, providing that the statutes of the province should be published from time to time in book form and regularly taught to the children, reminds one of the Roman republic in which the youth learned by heart "Twelve Tables" of the law as a preparation for citizenship. By the direction of Penn a school was opened in 1689, and was formally chartered in 1697. It was called the Friends' Public school and has continued to exist until the present time, although it is now and has for many years been known as the William Penn Charter school. It was managed by leading members of the Society of Friends, but admission as pupils was granted to children of all denominations. It was not a free school in the modern sense, nor was it supported by taxation. Penn soon discovered that his views were in advance of the people in his province, and the frame of government of 1701 completely ignores the subject of education. The Friends in their yearly meetings took up the question and as a religious society began to establish schools in which the rich paid tuition, but the poor received gratuitous instruction. From that day Friends' schools for elementary education have flourished and some are still in existence. The early records of the society reflect great credit upon its leaders, and their beneficent influence in favor of schools has been felt and acknowledged through two centuries of Pennsylvania history.

Many of the settlers who came somewhat later—from 1700 on—were from Germany and Switzerland. Some of these cherished views similar to those of Penn on the question of war, on the taking of oaths and on what they called a hireling ministry. They did not consider a learned education essential to the preaching of the gospel and the interpretation of the Scriptures. But they believed that every child should learn to read the Scriptures for himself. Wherever the German Baptists, the Mennonites, the Amish and the Schwenkfelders settled, they strove to have reading and writing taught. The denominations were often called "the Sects," to distinguish them from the so-called church people who supported an educated ministry.

The German Baptist brethren (often called Dunkards, or Dunkers), produced the two Saurs, father and son, who brought the art of printing from Europe, making their own type, manufacturing paper and printing Bibles as well as two hundred other books in the period before the revolution. Their activity in the making of books and in the printing of a German newspaper is conclusive evidence that the people to whom they were catering were able to read. The Seventh-Day Baptists, who seceded from the others, had among them a teacher by the name of Ludwig Höcker, who established Sunday schools forty years before Robert Raikes inaugurated the same movement in England.

The Mennonites produced the first writer on school management upon American soil in the person of Christopher Dock, "the pious schoolmaster of Skippack." He came to this country about 1714, taught school for a decade, bought a farm upon which he lived for ten years more, but his conscience did not feel easy until he returned to the school-room. He opened two schools, one in Skippack and the other in Salford (now Montgomery county), alternately devoting three days to each. In 1750 Christopher Saur, through a mutual friend, a Mennonite minister by the name of Dielman Kolb, obtained from Dock a description of his method of teaching school, with the understanding that it should not be published until after the author's death. Nineteen years afterward some friends secured his consent to have it published. The Elder Saur had died, the son had read the manuscript, mislaid it, and Dock rejoiced that it had been lost. It was subsequently found and given to the world. His views on school discipline were far in advance of an age which believed in the rod as essential to school-keeping. Dock wrote hymns which were sung by the Mennonites in their church services. One evening in the fall of 1771 he did not return from school. Search was made; he was found in the school house on his knees, dead. His spirit had flown while he was occupied with his usual devotions at the close of school. (Pennypacker's "Historical and Biographical Sketches," pages 91-98.) The same writer makes the following interesting statement in regard to the establishment of a school in Germantown, p. 55:

"On the 28th of June, 1701, a tax was laid for the building of a prison, erection of a market, and other objects for the public good. As in all communities the prison preceded the school house, but the interval was not long. December 30th of that year 'it was found good to start a school here in Germantown.'' Arent Klincken, Paul Wolff and Peter Schumacker, Jr., were appointed overseers to collect subscriptions and arrange with a school teacher. Pastorius was the first pedagogue." Francis Daniel Pastorius was educated at the Universities of Strasburg, Basle and Jena, was familiar with Greek, Latin, German, French, Dutch, English and Italian, and at the age of twenty-two publicly disputed in different languages upon law and philosophy.

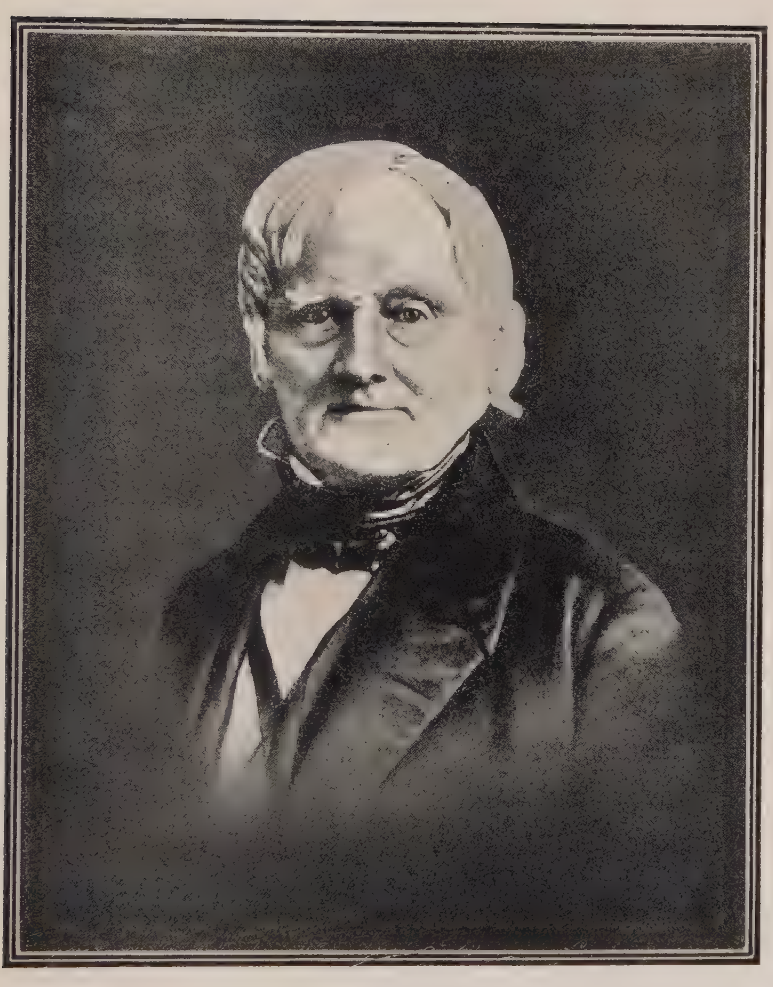
Several flourishing settlements in Pennsylvania were made by the Moravians, who still speak of themselves as Unitas Fratrum, or United Brethren in Christ. "From the founding of the church by the followers of the Bohemian reformer, John Huss, in 1457, down to the present day," says Dr. Wickersham, "no other religious organization, in proportion to membership, has done so much to provide a good education for its own children or to plant schools among the heathen in different quarters of the globe." In 1742 the Moravians opened a school at Germantown, in which the daughter of Count Zinzendorf, the Countess Benigna, was a teacher. A year later there were fifty pupils, more than half of whom were boarders, including two Indian girls. Similar schools were established in other places. The seminaries for ladies at Bethlehem and Litjtz and the Boys' school at Nazareth acquired national reputation, and still continue their excellent work. Their schools for the education of the Indians did a service which rivals that of the special Indian schools of our times." (Wickersham's "History of Education in Pennsylvania," pages 149-153.)

Many of the immigrants from Germany were members of the Lutheran and (German) Reformed churches. To their minds the church and the school were one interest. We read that in 1708, over eleven thousand German Protestants arrived in London on their way to America, and that among them were eighteen schoolmasters. Many others followed and settled in the province of Pennsylvania. As soon as their resources permitted of it in any settlement, they built a church and beside it a school house.

If they could erect only the former, it was used for school purposes. They brought with them from the Fatherland the rite of confirmation as a condition of admission to full church privileges. Confirmation was preceded by religious instruction based upon the catechism, whose questions and answers were to be treasured in the memory. This called for ability to read and to understand what was read.

The schools alongside the churches were under the supervision and oversight of the pastor; the children of the poor were educated free. The schoolmaster became, next to the pastor, the most important person in the community, and at times performed in connection with his school duties the function of reading sermons and baptizing children in cases of necessity.

About the middle of the Eighteenth Century a movement sprang up to establish charity schools among them. Rev. Michael Schlatter, who had been sent to America to visit the scattered German congregations of the Reformed or Calvinistic faith, went back to Europe and gave a soul-stirring account of spiritual destitution among them. While these people had been felling trees and raising crops, the churches and schools began to languish for want of pastors and teachers. "What makes the condition of these congregations the more deplorable and worthy of our sympathy," he wrote in his appeal, "is that most of them are not even provided with a good schoolmaster. Few even of such as are found qualified can be prevailed upon to labor in this work, because the poor people are not able to contribute enough to enable a schoolmaster, who devotes his whole time to his calling, to support himself and family even with the greatest care and economy." (Harbaugh's "Life of Schlatter," page 205.) Hearts were stirred in Holland, Switzerland and England. A society was established; the king contributed one thousand pounds and others of the nobility made liberal subscriptions. In all about twenty thousand pounds were raised. What ultimately became of this fund is not known, but for eight years the income was applied to



Samuel Breck

Member legislature 1817-1821; congressman 1823-1825; in 1832 elected to State Senate. Was chairman of joint committee of the two houses of Legislature in the session of 1833-34, to frame the free school law

aid in maintaining schools at Reading, York, Easton and other places. The movement was favored by the patriarch of the Lutheran church, Henry Melchior Muhlenberg. At his suggestion a printing press was established for the issue of books in two languages. Schlatter was made supervisor or visitor, with an annual salary of one hundred pounds, and continued in the discharge of these duties until about the middle of the year 1757, when he was succeeded by Dr. William Smith. These schools were designed for the youth of all Protestant denominations. Instruction was to be given in both the German and the English language, in writing, keeping accounts, and in the principles of religion. Girls were to be taught reading and the use of the needle. Catechisms and other good books were to be printed in both languages at the expense of the society and distributed to the poor. The aim was to qualify the Germans for all the advantages of native English subjects. The ability to speak English would enable them to rise to places of profit and honor, to buy and sell to greater advantage in the markets, to understand their own causes in the courts where the pleadings were in English.

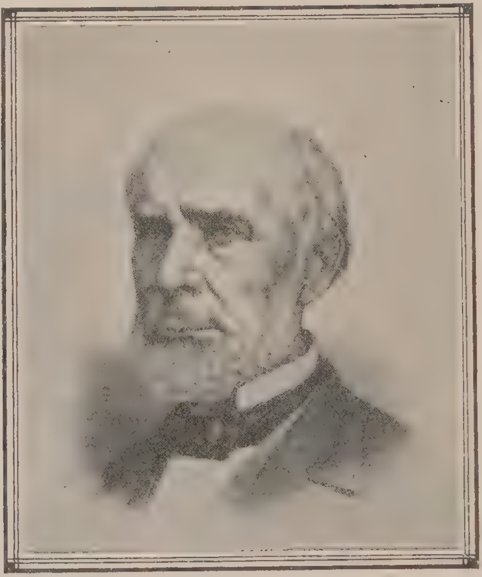
Christopher Saur has been severely blamed for his opposition to the movement. He saw in it an attempt to alienate the Germans from the views of the Friends on the subject of war. He claimed that the intellectual and spiritual destitution of the Germans was not as bad as represented by Schlatter. That there was a measure of truth in his claims is evident from a letter dated April 9, 1763, and addressed by Rev. Alexander Murray to the secretary of the Venerable Society for Propagating the Gospel in Foreign Parts: "The country for miles around this city [Reading] is thick peopled and by few others than Germans and Quakers. The former, being computed twelve to one of all other nations together, seem to be abundantly well provided in teachers of one denomination or another, and as long as they are so devotedly attached to their native tongue as they are at present, an English minister can be of no great service to them. For this they might be at no loss for English schoolmasters, yet they choose to send their children to German schools, which they have everywhere in great plenty."

Schemes to change the language of a people in order to alienate them from one crown and to attach them to another are well known in Europe. The readiness with which the king of England and the nobility subscribed money for these schools may have been partly due to a desire to attach the Germans to England and to make them English in sympathy and language. Dr. William Smith (some time provost of the University of Pennsylvania) proposed severe measures to stamp out the use of German. The right of the Germans to vote for members of the assembly was to be suspended until they had acquired a competent knowledge of the English language and the provincial constitution. All law writings were to be void unless made in the English language. No newspapers, almanacs or other periodical papers written in a foreign language were to be printed unless accompanied by an English translation. Further importations of Germans were to be prohibited, and those already in the country were to be bound to the provincial government by a common language and the consciousness of a common interest. Dr. Smith even proposed that all members of the assembly should take the oath of allegiance and subscribe a declaration that they would not refuse to defend their country against His Majesty's enemies. This would have excluded the English Quakers, as well as the non-resisting Germans to whom Saur belonged. Dr. Smith was even suspected of circulating the report that the Germans were in league with the French against the English crown.

Politics and the school are like oil and water; it is not easy to mix them and the result is always deplorable. Hence, it is not strange that the schools failed after they passed under the management of Dr. Smith as superintendent. Popular distrust, the influence of Saur, and Indian troubles along the frontier, caused these schools to decline. The scheme came to an unfortunate end about 1762. Had the experiment succeeded, the German population could have transacted business to better advantage and taken a more active part in public affairs; they could have joined the currents of national life at least half a century earlier. One generation at English and German schools would have sufficed to make them acquainted with the language of the courts and of the provincial assembly. From this point of view one cannot help regretting the opposition of Saur and the failure of the scheme.

But there is another point of view from which the hostility of Saur looks providential. Had Dr. Smith succeeded in attaching the followers of Schlatter and Muhlenberg to the governor, it might have turned the balance of power in Pennsylvania in favor of continued support of the British crown. During the darkest days of the revolution, Washington had a base of supplies in the sections in which the Lutherans and the German Reformed were the principal settlers.

Of the other Protestant denominations the Presbyterians deserve special praise for their energy as pioneers, for their courage in supporting American independence, and for their services in the cause of education. Their ambition has been aptly summed up in the words: "A home, a school and a house of worship." Their preachers were educated men who took special interest in elementary and advanced schools. Many of the early academies were founded by them. The youth educated in these academies often left their homes for the cities, where they became leaders in church and state, while the farms on which they were reared passed into the possession of the Pennsylvania Germans, frequently causing a gradual change in the population, if not in language, of an entire community. The "Log College," founded by the scholarly Rev. William Tennent, pastor of Neshaminy church, in Bucks county, supplied the germ out of which have grown Princeton university and other institutions of higher learning. An academy in Northampton county produced George Wolf, who as governor became the staunch friend of common schools. The schools in the Cumberland valley gave the nation a galaxy of distinguished men, including one president of the United States, and several cabinet officers. The good which was done by these academies far surpasses in value the cereals and cattle which their pupils might have raised as educated farmers.



Thomas Henry Burrowes

State superintendent of public instruction, 1835-38, and 1860-1863. Photographed especially for this work from original in the educational department at Harrisburg

The Baptists and the Methodists have been rivals in church extension and in the promotion of education. Their various organizations were ever on the side of the school. In the course of years they outstripped the other Protestant denominations in the money invested in schools, and in the number of institutions of higher learning which flourish through their vigorous support throughout the land. Both denominations contributed their share towards education in early days, and it would be unsafe to predict which will surpass the other in the years to come.

The parochial schools of the Protestant churches have been gradually passing away on account of the free schools. Those that survive under the auspices of the Lutheran, Episcopal and Moravian churches, and of the two divisions of the Society of Friends, are still doing an excellent work, but they are far outnumbered by the parochial schools of the Catholic church. From small beginnings in the Eighteenth Century the attendance at the Catholic parochial schools has grown until it exceeds one hundred and twenty-five thousand. The elementary schools are taught by various organizations of sisters, each striving to prepare the best teachers. Separated from the social world and its distractions, these sisters teach with singleness of purpose and at personal sacrifices which command the admiration of many who are outside of the Catholic church. In the cities the work beyond the elementary schools is carried forward in well-equipped high schools and colleges. In communities where the membership is less numerous, the course of study is so arranged that pupils may as far as possible pass at the end of any year to corresponding grades in public schools.

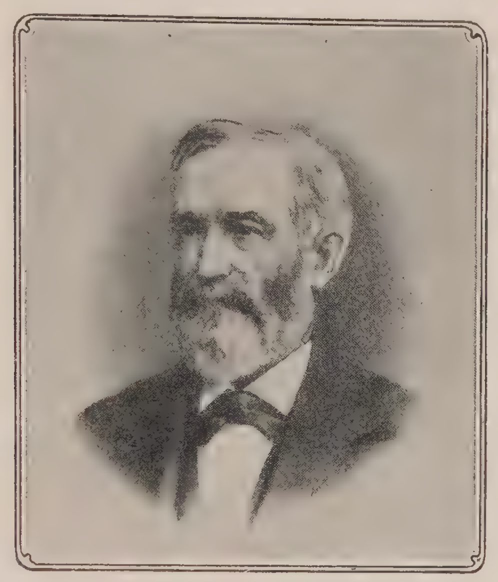
The parochial schools of both Catholics and Protestants are at a disadvantage in the competition with the public schools, because those who send their children to the former must, in addition to this expense, pay their share of taxes for the maintenance of the public schools. In this lies a source of power; for people soon learn to love that for which they make sacrifices. For a number of years the Catholic sisters taught in the public schools of Galitzin, St. Mary's, and several other places. In 1894 the Junior Mechanics tried to prevent this through the County court and the Supreme court, but failed. Through their efforts a bill was passed at the next session of the legislature, forbidding the wearing of a religious garb by public school teachers. The sisters promptly obeyed the law. Parochial schools sprang into existence where Catholic children formerly attended the public schools. The "garb law" causes friction now only in districts which employ teachers who wear the plain garb of the Mennonites or of other religious organizations cherishing similar views in regard to dress.

The schools erected alongside the churches were not numerous enough to supply the educational wants of the early settlers, and a class of schools, called neighborhood schools, gradually grew to be more numerous than the church schools.

Dr. Wickersham has well said: "Had there been a school at every church, many children lived at too great a distance to attend it. But vast sections of thinly settled country were wholly without churches, and in others the churches were so scattered that they could not be reached by young children going to school. Adults frequently traveled on horseback or in wagons five or ten miles to church; it was impossible for little boys and girls to walk such long distances, often through unbroken forests. Hence arose multitudes of schools, sometimes composed of the children of a single family, or of several families, and generally growing into schools of little communities or neighborhoods. Such schools may approximately be called neighborhood schools, although widely known by the name of 'pay' or 'subscription' schools." . . . "The establishment of these neighborhood schools was most rapid in sections settled by people of different religious denominations. In communities of a single denomination, and in towns church schools were generally established in preference; but as the first settlers in Pennsylvania were divided into many sects, and as these soon became very much intermixed, it was not long before the neighborhood schools greatly outnumbered the schools of all others classes." ("History of Education in Pennsylvania," p. 178.)

Again he says: "In proportion to population the neighborhood schools were fewest in the oldest settled parts of the State; for as the people moved west into the Cumberland valley, along the

Susquehanna and Juniata, and over the Alleghanies, intermingling socially and in business, out of common toils, common privations, common dangers, and common interests, there necessarily came to be common schools. The churches in the early days were foremost in the work of education everywhere and always, but distinctive church schools were not numerous in the middle and northern counties, and very few of them were ever established in Western Pennsylvania. Ministers founded schools in their sections of the State and taught them, but they rarely formed a part of the church organization, as was so frequently the case in the older settlements." ("Hist. of Education in Penn.," p. 179.)



Henry Cuyler Hickok

First State superintendent of public instruction after the organization of a separate department, 1857-1860. Photographed especially for this work from original in the educational department at Harrisburg

Sometimes the neighborhood school was the product of individual generosity. The writer knows from tradition of a number of instances in which a prosperous citizen, having children of his own to educate, or feeling a deep interest in the youths growing up near him, erected a school house upon his own land, hired a teacher, admitted the poor free of charge, and exacted a moderate fee (two or three cents a day) from those whose parents were able to pay. Sometimes the movement for a school was started by an itinerant teacher, who consented to stay as long as the community furnished him a livelihood. Generally the building was erected by the contributions of money and labor from the entire community; trustees were then selected to hire the teacher and take general charge of the school.

The primitive equipment of the early schools is thus described by Prof. A. S. Bolles:

"The provincial school house was generally a rough log cabin, and the spaces between the logs were filled with chips of wood plastered with mortar. The floors were of earth and sometimes of timber, through which snakes often crawled. Nearly one side of the house was occupied by the chimney, and there were several windows, with small panes of glass. The furniture consisted of four-legged benches made of logs split in two and hewn to a proper thickness, and stools and tables of the same material and workmanship. The desks were placed against the wall, facing outward, and seats without backs were in the middle of the room for the smaller scholars.

"The primary schools had generally a distinct religious side. The lowest primers were quite as much church-books as school-books, for they contained hymns, prayers, creeds and catechisms, as well as the alphabet and elementary lessons. The first regular branch of instruction was reading, for this was preparatory to learning the catechism and taking part in religious exercises. When writing was first introduced it was confined wholly to boys, as the requirement was deemed unnecessary for girls. So deeprooted was this prejudice that some men have entertained it almost to the present day. Paper was costly and birch bark was often used as a substitute. Ink was made of nut-galls bruised, to which were added a proper proportion of water and some rusty nails. Sometimes an ink boy was appointed who carried the fluid in a bottle or a horn to each writer as he needed it, but the custom was for each pupil to have his own supply. Pens were made of goose quills and much of the master's time was employed in cutting and mending them. Arithmetic was taught, but without aid of books. The 'sums' were dictated by the master and worked out on paper, for blackboards were unknown and slates and pencils did not come into use until after the Revolution. 'Ciphering books' were afterward brought into use. Geography and grammar were not taught until after the adoption of the common school system."

Although the pay schools did not lose all the religious characteristics of the church schools, they were frequently inferior in efficiency because they were not under the immediate care of an educated clergyman. The punishments were severe and the methods of instruction were crude, yet such is the aptness of youth and the innate desire for knowledge that the boys and girls learned the "three R's" in spite of the imperfections of the master. Sometimes the older boys resented his tyranny, and driving him off, closed the school. Some of these teachers deserved the treatment, for they were little better than tramps. Addicted to drink, they had little character and less scholarship. Others, however, were men of piety and ability and their memory was held in grateful remembrance by their pupils. In a subsequent period many a public school was planted on or near the site where for years the people had of their own volition maintained a school for the neighborhood. The schools maintained by joint effort led the way and gradually prepared the public mind for schools supported by taxation and alike free to the children of all.

During and After the Revolution, Including the Struggle for Free Schools.—When war rages, schools do not flourish. The teacher who did not turn soldier found it hard to live during the Revolutionary war. The continental money was constantly depreciating in value, and funds collected for school purposes became inadequate. The financial misfortunes of the fund of eight hundred pounds raised by the Schwenkfelders in 1764 furnish an example in point. In an address issued in 1791 the trustees state that, with the interest of this fund and by free contributions, they supported a school until the debtors of their fund began to pay their interest, and at last the principal, in depreciated currency. Through this depreciation the capital stock, eight hundred pounds, contracted to less than one hundred pounds in 1793, which sum was then offered to the original subscribers or their heirs. Of this sum less than twelve pounds was accepted, the rest being donated to the fund. The founding of Perkiomen Seminary may be said to have a historic connection with the trusteeship of this fund, four trustees of the school being church trustees, a *quasi* remnant of the trustees of the schools of 1764.

After the war there was a change for the better. Schools revived; the people who differed in religion and politics found that they could agree upon the question of education. In Philadelphia many private schools were started. White's Directory of 1785 contains the names of at least one hundred teachers of private schools, mostly women. "The grade of the schools kept by these old schoolmasters and schoolmistresses was from that of an infant school up to that of the classical academy. The teaching of music and needle-work was quite common in schools for girls."

McMaster in speaking of the educational condition of America directly after the close of the Revolutionary war, states that in New York and Pennsylvania a school house was never to be seen outside of a village or town. Dr. Wickersham, on the contrary, claims that there was scarcely a neighborhood without one, and that at the adoption of the common school system, in 1834, there must have been at least four thousand school houses in the State built by the voluntary contributions of the people in their respective neighborhoods. Those who are at all familiar with the rural sections know that on this point Wickersham is nearer the truth than McMaster.

"At almost every ridge of woods there is a school house," said Acrelius, writing, about 1750, of the country in the vicinity of Philadelphia. There is no evidence to show that these school houses were destroyed by either army. Let any one trace the succession of school houses in rural sections, and he will find many a series that goes back to the second half of the eighteenth century.

In 1801 Christopher Ludwig, who had been head baker for the continental army, made a bequest of $13,000 for the education of poor children without regard to country, race or sect. The trustees of the university wanted the money for their charity schools. Another claimant was the Philadelphia society for the establishment and support of charity schools, which had grown out of a movement in 1799 to open a night school for poor children. It led to an exciting race to Lancaster, where their charters had to be enrolled, and the latter organization won. In 1814 Dr. Rush recommended the society to the citizens, and $2,800 were subscribed for its support. Free instruction was given to about four hundred children.

One of the "notions" that found favor in the early days was the monitorial system of Andrew Bell and Joseph Lancaster. The former tried the system at Madras, India, and the latter in London, England, where he gained the approval of King George III. Coming to America, he introduced his system of instruction in New York and Philadelphia, and received the commendation of DeWitt Clinton and Governor Hiester of Pennsylvania. By the act of 1818 Philadelphia was made the first school district of Pennsylvania, and it was further enacted that "the principles of Lancaster's system of education in its most approved state shall be adopted and pursued." The system was also introduced into Lancaster City (which, with the incorporated boroughs of the county, was constituted, by the act of 1822, the second school district of Pennsylvania). The building in which the experiment was tried still stands and is now used as the annex to the high school. The system was also tried in Columbia, Harrisburg, Pittsburg, Milton, Erie, New Castle, Greencastle and perhaps at a few other places.

Under the monitorial system the older and more advanced pupils were called upon to instruct those younger and less advanced. The idea was carried to ludicrous extremes. "Give me four and twenty children to-day and I will supply you to-morrow with as many teachers," was the promise of Mr. Bell. "By the aid of monitors one master can teach one thousand boys," was the claim of Mr. Lancaster. Milder methods of discipline were advocated and practiced. "Boys who came to school with dirty faces, had them washed before the whole school by little girls, who accompanied the ablution with a gentle box on the ear." (Edmond's "History of the Central High School of Philadelphia.")

At first sight it seems strange that so curious a system of instruction and discipline should have found favor with men of affairs. But there was a growing dislike for flogging and other harsh practices of the pedagogues of the eighteenth century. Men were everywhere reaching out after something new and better. Pestalozzi himself believed that he could perfect a method by which the most ignorant mother might teach her own children. It is not strange that philanthropists, who saw the need of universal education and were deterred by its cost, should be carried away by a system that promised so much at small expense. The human heart is ever anxious to get something for nothing, especially in religion and education. The law requiring the use of the Lancasterian system of teaching in the schools of Philadelphia was repealed in 1836.

Thomas Dunlap gives the following account of what he found upon entering the board of directors of public schools in 1824: "Seven school houses contained fourteen schools in each of which about two thousand children were to be educated. . . . Schools where the young idea was to be developed in penmanship by scratching with sticks in the sand-bath, developed into arithmetic by a doleful simultaneous chant of the multiplication table, in which neither the school, monitor nor master could detect one intelligible sound, developed into poetry and morals by howling in horrid groans certain doggerel ballads of Lancaster himself. Schools where the baby of five was the all sufficient teacher of the baby of four, save that the latter if stoutest generally practiced more successfully in flogging his monitor, than in figuring in his sand-box, and where but too often the master lounged through two or three hours in the morning and as many in the afternoon in gazing down upon the intellectual pandemonium beneath his rostrum, diversifying his intellectual labors by not infrequently bringing his rattan in as 'thirdsman' between the stout baby and the cowardly baby monitor.

"The only true argument ever advanced in its favor was its cheapness. It was cheap—very cheap! Sand and rattan were its chief returns."

The poor teaching which characterized the monitorial schools emphasized the importance of special preparation for teaching and paved the way for the establishment of the Model school for the training of teachers, out of which has grown the Philadelphia Normal school, an institution that now selects its students from the graduates of the High school, giving them two years in theory, practice and additional study as a preparation for teaching in the schools of the city

From Philadelphia the agitation for schools, supported by taxation, spread over the State. The growing belief in universal intelligence as a preventative of crime and a source of prosperity, the failure of the different plans to educate the poor at public expense, and the lack of adequate school facilities in many sections gradually forced the question into the halls of legislation; the opposition carried it to the ballot box, and finally in 1851 into the Supreme court.

In this connection a perusal of the clauses of our state constitutions from 1776 to 1873 shows a remarkable advance in public opinion, and also shows the gradual elevation of the standard of education with each succeeding constitutional convention.

The constitution of 1776 provided that "a school or schools shall be established in each county by the legislature for the convenient instruction of youth, with such salaries to the masters, paid by the public, as may enable them to instruct youth at low prices; and all useful learning shall be duly encouraged and promoted at one or more universities."

The constitution of 1790 (article vii., section 1) provided that "the legislature shall as soon as conveniently may be, provide by law, for the establishment of schools throughout the State, in such manner that the poor may be taught gratis. Also (section 2) the arts and sciences shall be promoted in one or more seminaries of learning."

The language of the constitution of 1790 was repeated in article VII of the constitution of 1838.

The educational article of the constitution of 1873 provides as follows: Section 1. "The general assembly shall provide for the maintenance and support of a thorough and efficient system of public schools, wherein all the children of this commonwealth above the age of six years may be educated, and shall appropriate at least one million dollars each year for that purpose."

Section 2. "No money raised for the support of the public schools of the commonwealth shall be appropriated to or used for the support of any sectarian school."

Section 3. "Women twenty-one years of age and upwards shall be eligible to any office of control or management under the school laws of this state."

To the foregoing extracts we append an important decision of the Supreme court which may be said to have saved the life of the Pennsylvania system of common schools. In the case of the Commonwealth vs. Hartman (17 Pa., 118), it was held as follows:

Thaddeus Stevens

Member State Legislature 1833-1835; exerted great influence in saving the school system of Pennsylvania; member State Constitutional Convention 1837; member State Legislature 1837-1838 and most prominent member of the Whig and anti-Mason House; member State Legislature again 1841; congressman 1849-1853, and again 1858-1868; anti-slavery advocate; initiated the movement which resulted in the Fourteenth Amendment to the Federal Constitution; 1868, advocated the impeachment of President Johnson and was chairman of the board of managers appointed to conduct the trial

"It seems to be believed that the last clause of this section (Sec. 1, Article VII of the constitution, 1790, and repeated as Art. VII in the constitution of 1838) is a limitation to the power of the legislature, and that no law can be constitutional which looks to any other object than that of teaching the poor gratis. The error consists in supposing this to define the maximum legislative power, while in truth it only fixes the minimum. It enjoins them to do this much, but does not forbid them to do more."

Gratuitous Instruction of the Poor.—Educational legislation is seldom needed for the benefit of children of the rich. In every age and country the wealthier classes have been able to furnish all the schooling which their children required. The plan of the constitution of 1776 would have made education possible for the children of parents in moderate circumstances, but if parents were unable to pay the rates of tuition, their children were beyond the reach of schooling unless it was furnished gratuitously in denominational or neighborhood schools. The constitution of 1790 took a step in advance by seeking to provide for the gratuitous instruction of the poor. The clause, "as soon as conveniently may be," did not make immediate action mandatory, and the oath of office did not trouble the conscience of legislators if action was deferred to the future as a more convenient time. Several governors in succession referred to the inadequate provisions for the education of all the children, but with little apparent effect. The legislation of 1802, 1804 and 1809 was inadequate, for neither the overseers of the poor, nor the justices of the peace, nor the assessors acting under the direction of the county commissioners, could send children to school where no schools were in existence. According to the report of the secretary of the commonwealth, made February 28, 1829, in response to a request of the legislature, there were, in the thirty-one counties which made reports, only 4,940 poor children who received instruction in the common schools in 1825; 7,943 in 1826; 9,014 in 1827, and 4,477 in 1828, so far as the figures had then been reported. The society organized in 1828 for the promotion of public schools ascertained that of about 400,000 children of school age at least 250,000 were growing up in ignorance because no schools were within their reach.

After the act for a general system of education was passed, it was believed by some to be unconstitutional. Fortunately, the Supreme court held that while schools for the poor were explicitly commanded by the constitution, schools for all were not forbidden. Under the wording of the constitution of 1776 and under the form in which the article on education came before the convention of 1789-90, providing for the payment by the State "to the masters of such salaries as should enable them to teach at low rates," a system of free schools would have been impossible. Through the efforts of Timothy Pickering and others, the wording of the constitution of 1790 was changed so as to include the words "that the poor may be taught gratis" in schools established by law throughout the State. And yet this action paved the way for legislation which made a distinction between the rich and the poor, and which in one form or another remained the law until it was obliterated in 1874. The act of 1809 permitted counties to grant free instruction only between the ages of five and twelve years.

On the eve of a gubernatorial election James Buchanan said: "If ever the passion of envy could be excused a man ambitious of true glory, he might almost be justified in envying the fame of that favored individual, whoever he may be, whom Providence intends to make the instrument in establishing common schools throughout this Commonwealth. His task will be arduous. He will have many difficulties to encounter and many prejudices to overcome; but his fame will exceed even that of the great Clinton in the same proportion that mind is superior to matter. Whilst the one has erected a frail memorial, which, like everything human, must decay and perish, the other will raise a monument which shall flourish in immortal youth, and endure whilst the human soul shall continue to exist. 'Ages unborn and nations yet behind, shall bless his memory.' "

Governor Shulze was a man of culture, whose messages contain the most urgent appeals for legislation designed to put within reach of all the advantages of an education. In his message of 1827 he says: "Among the injunctions of the constitution, there is none more interesting than that which enjoins it as a duty on the legislature to provide for the education of the poor throughout the Commonwealth. Whether we regard it in its probable influence upon the stability of our free republican government, or as it may contribute to social and individual happiness, it equally deserves the earnest and unremitted attention of those who are honored with the high trust of providing for the public welfare," etc.

Again, in 1828, he wrote: "The mighty work and consequent great expenditures undertaken by the State, cannot induce me to forbear again calling attention to the subject of public education. To devise means for the establishment of a fund, and the adoption of a plan, by which the blessings of the more necessary branches of education should be conferred on every family within our borders, would be every way worthy the legislature of Pennsylvania; and attention to this subject, at this time, would seem to be peculiarly demanded by the increasing number of children and young persons who are employed in factories," etc.

The honor which was denied to Governor Shulze fell to the lot of his successor, Governor Wolf. To his mind it was a startling fact that out of four hundred thousand persons of school age, two hundred and fifty thousand should not be inside of the school during the entire year. He undertook to establish a system of public instruction and made it the special object of his ambition, the cherished purpose of his administration. In his first inaugural address and in message after message he referred to the need of legislation for the establishment of a system of common schools. He opened an office for the transaction of business in one of the rooms of the capitol, threw aside all forms of exclusiveness which might hinder the approach of the people, and by daily contact with legislators and other public men, enforced the duty of action to remove this stain from the Commonwealth. He sought to dispel the notion that wealth is preferable to knowledge; he pointed out the relation of universal education to the welfare and prosperity of the people, and he maintained that a well-educated people will always possess a moral and physical energy superior to an ignorant and illiterate people, and that education tends to check vice and to diminish crime. Prejudice, avarice, ignorance and error were the adversaries he faced in his fight for free schools; and in his victory over these, and in what he accomplished for the general diffusion of knowledge among the people of Pennsylvania by the establishment of a system of free schools, were verified the most sanguine predictions of his most ardent friends. "To George Wolf," says Major Armor, "that honor was accorded and to him in all time to come, when the inquirer shall seek to know by whose voice and sturdy will that great boon was championed and finally won, will the paeans of gratitude be sung."

It would be unjust to ascribe to Governor Wolf all the glory for the establishment of our system of free schools. In this noble work he was aided by many others who labored in the same great cause both before and after him, as well as during his administration. The Philadelphia Society for the Promotion of Public Schools, organized in 1828, did much by its publications and by correspondence to awaken an interest in common schools throughout the State. Through its agency public meetings were held and petitions in favor of free schools were sent to members of successive legislatures. It was claimed by Ex-State Superintendent Hickok, shortly before his death, that portions of Governor Wolf's message relating to education were framed by Roberts Vaux, president of the society to which reference has been made.

Legislative Action.—As early as 1824 an act was passed providing, according to its title, for more effectually laying the foundation of a general system of education throughout the

Commonwealth. It provided for the selection by vote or appointment by the court of three "school men" in every township, borough or ward to look after the education of the poor. The citizens of the several townships, wards and boroughs were authorized to vote on this question of a general tax, schools or no schools, and in case a majority voted for schools, the school men were to levy taxes, erect school houses, furnish text books and stationery, examine and employ teachers and supervise the schools. There are no records to show that the act ever went into actual effect. Public opinion was not yet ripe for such a step. In 1826 it was repealed and the act of 1809 for the education of the poor was restored. Out of the failure of the efforts to educate the poor as a class arose the idea of schools free to all.

During the session of 1831, petitions asking for the establishment of a better system of schools came to both houses from twenty-four counties (also a few against), showing that the question was before the people. By the act of April 2, 1831, a school fund was created, interest to be added to the principal until the interest should amount to $100,000 annually, after which the interest was to be distributed and applied for the support of common schools. It was supposed that the fund would in ten years amount to two millions of dollars. Three years later, (1834), an act was passed which laid the foundation for the Pennsylvania system of public instruction.

The honor of having framed the act of 1834 belongs to Samuel Breck, a senator from Philadelphia, who entered the public service for the sole purpose of giving the State a general system of education, and as soon as this was accomplished he retired to private life. As chairman of the joint committee of the house and senate he addressed to the governors of several States, and to other persons versed in educational affairs, a carefully prepared series of questions covering all subjects necessary to be understood by the committee and the legislature in drafting and voting upon a bill designed for the establishment of a thorough and permanent educational system for the people of our Commonwealth. The answers to these interrogations were "prompt, full and satisfactory," and through the knowledge thus acquired Senator Breck prepared the frame of the act upon which the free educational system of Pennsylvania now stands.

When the bill came up for final passage there were only three votes against it in the senate and but one in the house. It was approved on the first day of April, 1834, and the storm of excitement that followed extended into every county in the State. "In many districts," says Dr. Wickersham, "the contest between those in favor of accepting the new law and those determined to reject it, became so bitter that party and even church ties were for a time broken; the rich arrayed themselves against the poor, and the business and social relations of whole neighborhoods were greatly disturbed."

Arms, 1809

A chief executive, solicitous of his political future, might have hesitated in his course or changed his policy to please the angry populace, but Governor Wolf remained steadfast in his purpose and took a firm stand on the side of the new law in his message of December 3, 1834. After admitting that the law might be defective in certain details, he claimed that its objectionable features could be ascertained by experience and remedied by suitable amendments, and he bravely asserted that the new system was dcidedly preferable to the old from every point of view.

When the next legislature assembled it was found that a majority in the senate was against the new system, and the attitude of the house was doubtful. A bill repealing the law passed the senate and was reported to the house unchanged by the committee on education. Thirty-eight counties out of fifty-one sent petitions for repeal, while others asked for a modification of its provisions. Only eleven counties refrained from embarrassing their representatives by such petitions. The bill was taken up in committee of the whole, and on April 10 a substitute for the senate bill was reported to the house, which, instead of repealing the act of 1834, gave it new strength by removing some of its gravest defects, and adding provisions designed to facilitate its practical operation.

The next day (April 11, 1835) has been rightly named an eventful day in the history of the school legislation of Pennsylvania. The amended bill came up on second reading. The struggle over its passage continued during the forenoon, afternoon and evening sessions. At a critical point in the proceedings the member from Adams county, Thaddeus Stevens, said:

"Mr. Speaker: I will briefly give you the reasons why I shall oppose the repeal of the school law. This law was passed at the last session of the Legislature with unexampled unanimity, but one member of this House voting against it. It has not yet come into operation, and none of its effects have yet been tested by experience in Pennsylvania. The passage of such a law is enjoined by the Constitution and has been recommended by every Governor since its adoption. Much to his credit, it has been warmly urged by the present Executive in all his annual messages delivered at the opening of the Legislature. To repeal it now, before its practical effects have been discovered, would argue that it contained some glaring and pernicious defect, and that the last Legislature acted under some strong and fatal delusion, which blinded every man of them to the interests of the Commonwealth. I will attempt to show that the law is salutary, useful and important; and that consequently the last Legislature acted wisely in passing, and the present would act unwisely in repealing it; that, instead of being oppressive to the people, it will lighten their burthens, while it elevates them in the scale of human intellect.

* * * * "If an elective republic is to endure for any great length of time, every elector must have sufficient information, not only to accumulate wealth and take care of his pecuniary concerns, but to direct wisely the Legislature, the Ambassadors, and the Executive of the nation; for *some* part of all these things, *some* agency in approving or disapproving of them, falls to every freeman. If, then, the permanency of our government depends upon such knowledge, it is the duty of the government to see that the means of information be diffused to every citizen. This is a sufficient answer to those who deem education a private and not a public duty—who argue that they are willing to educate their own children, but not their neighbor's children. * * * * *

"Many complain of the school tax, not so much on account of its amount, as because it is for the benefit of others and not themselves. This is a mistake. It is *for their own* benefit, inasmuch as it perpetuates the government and ensures the due administration of the laws under which they live, and by which their lives and property are protected. Why do they not urge the same objection against all other taxes? The industrious, thrifty, rich farmer pays a heavy county tax to support criminal courts, build jails, and pay sheriffs and jail-keepers, and yet probably he never has had and never will have any direct personal use for either. He never gets the worth of his money by being tried for a crime before the court, allowed the privilege of the jail on conviction, or receiving an equivalent from the sheriff or his hangmen officers! He cheerfully pays the tax which is necessary to support and punish convicts, but loudly complains of that which goes to prevent his fellow-being from becoming a criminal, and to obviate the necessity of those humiliating institutions. * * * * *

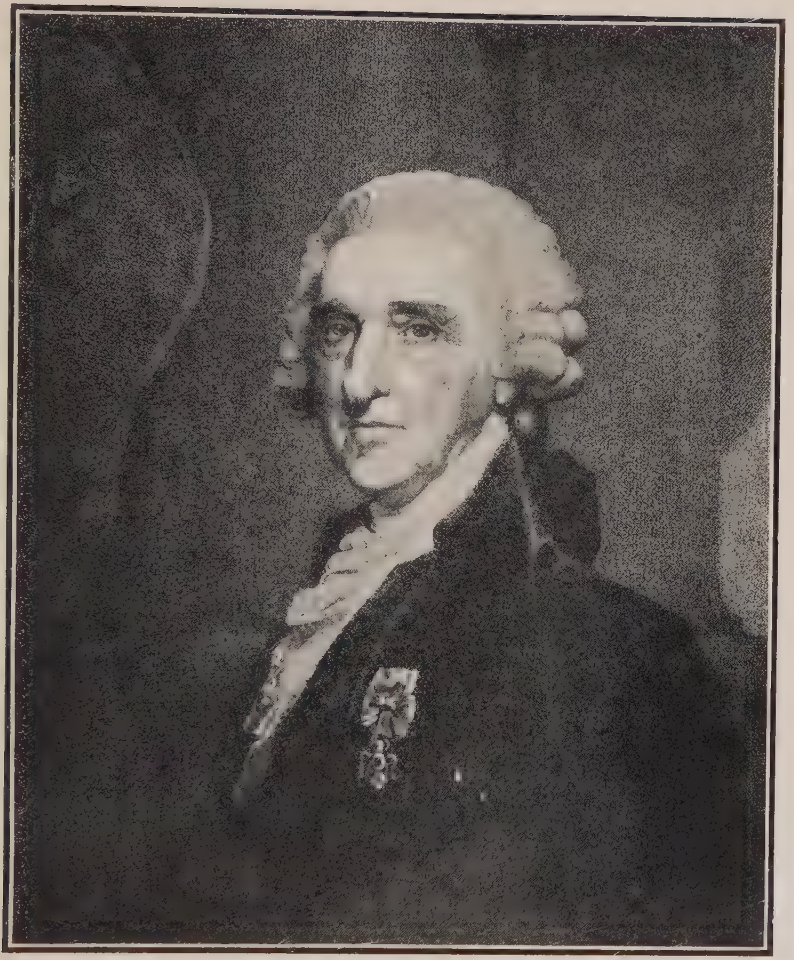
"Why shall Pennsylvania now repudiate a system which is calculated to elevate her to that rank in the intellectual which, by the blessing of Providence, she holds in the natural world—to be the keystone of the arch, the 'very first among her equals?' I am aware, sir, how difficult it is for the great mass of the people, who have never seen this system in operation, to understand its advantages. But is it not wise to let it go into full operation, and learn its results from experience? Then, if it prove useless or burthensome, how easy to repeal it! I know how large a portion of the community can scarcely feel any sympathy with, or understand the necessities of the poor; or appreciate the exquisite feelings which they enjoy, when they see their children receiving the boon of education, and rising in intellectual superiority above the clogs which hereditary poverty had cast upon them. It is not wonderful that he whose fat acres have descended to him, from father to son in unbroken succession, should never have sought for the surest means of alleviating it. Sir, when I reflect how apt hereditary wealth, hereditary influence, and, perhaps as a consequence, hereditary pride, are to close the avenues and steel the heart against the wants and the rights of the poor, I am induced to thank my Creator for having, from early life, bestowed upon me the blessing of poverty. Sir, it *is* a blessing—for if there be any human sensation more ethereal and divine than all others, it is that which feelingly sympathizes with misfortune.

"But we are told that this law is unpopular, and that the people of the State desire its repeal. Has it not always been so with every new reform in the condition of man? Old habits and old prejudices are hard to be removed from the mind. Every new improvement which has been gradually leading man from the savage through the civilized up to a highly cultivated state, has required the most strenuous and often perilous exertions of the wise and the good. But, sir, much of its unpopularity is chargeable upon the vile arts of unprincipled demagogues. Instead of attempting to remove the honest misapprehensions of the people, they cater to their prejudices, and take advantage of them, to gain low, dirty, temporary, local triumphs. I do not charge this on any particular party. Unfortunately, almost the only spot on which all parties meet in union, is this ground of common infamy!

"I have seen the present chief magistrate of this Commonwealth violently assailed as the projector and father of this law. I am not the eulogist of that gentleman; he has been guilty of many deep political sins. But he deserves the undying gratitude of the people for the steady, untiring zeal which he has manifested in favor of common schools. I will not say his exertions in that cause have covered all, but they have atoned for many of his errors. I trust that the people of this State will never be called upon to choose between a supporter and an opposer of free schools. But if it should come to that, if that should be made the turning point on which we are to cast our suffrages, if the opponent of education were my most intimate personal and political friend, and the free school candidate my most obnoxious enemy, I should deem it my duty, as a patriot, at this moment of our intellectual crisis, to forget all other considerations, and I should place myself unhesitatingly and cordially, in the ranks of him whose banner streams in light."

It was Stevens's eloquence and leadership that won the victory for the free school system. He was a prominent leader in the anti-masonic movement and a political opponent of Governor Wolf. But immediately after his great speech the governor sent for Mr. Stevens, and when the latter entered the executive chamber embraced him, and with tearful eyes and broken voice thanked him for the great service he had rendered to our common community.

The full text of the speech was reprinted in the Pennsylvania School Journal in 1891, Vol. 39, pages 326-330. In 1835 there was no stenographer in either house of the legislature. Some hours after the delivery of the speech an attempt was made to report it from memory, but the written speech is said to convey very little of the force and power of the words as they fell from the orator's lips. The speech, beautifully printed on silk, was afterwards presented to him by some school men of Reading, and



Thomas McKean

Signer of the Declaration of Independence; member Delaware General Assembly, 1752-1769; member stamp-act congress, 1765; member Continental Congress, 1774-1783; chief justice of Pennsylvania, 1777-1799; member Pennsylvania Constitutional Convention, 1790; governor of Pennsylvania, 1799-1808

was proudly kept by him as a relic till his death. He considered it the most effective speech he ever made, and styled it the "crowning utility" of his life. At another time he remarked that he should feel himself abundantly rewarded for all his efforts in behalf of universal education if a single child educated by the Commonwealth should drop a tear of gratitude on his grave.

To those who are fond of studying the details of school administration and the historic beginnings of great movements the act of 1834 is exceedingly interesting. It made each county a school division, and each ward, township and borough a school district. It prescribed the manner of electing six citizens to serve as school directors. Within ten days after their election they were to meet and organize by electing a president, secretary and treasurer. The method of deciding what district schools were to be put in operation under the law was complicated and unsatisfactory in practice. On a day specified by law there was to be held at the county seat a joint meeting of the commissioners and one delegate from each board of school directors for the purpose of deciding whether or not a tax for the expenditure of each district should be levied. It was provided that no tax should be less than double the funds furnished to the county as its share of the appropriation in aid of common schools. This appropriation was to be $75,000 annually until the year when the school fund (created in 1831) should yield an annual interest of $100,000. The law made a strong appeal to the desire of the average citizen to get money out of the State treasury under legal sanction. At the joint meeting a vote was to be taken by yeas and nays on the question of making an appropriation for common schools (each man's vote was recorded), and if the majority decided against such appropriation the districts whose delegates voted in the negative were not entitled to any share of the State appropriation, and the whole amount due to the county was to go to the districts whose delegates voted in the affirmative, in the ratio of the taxable inhabitants of each. If a tax was authorized by the majority, it was to be apportioned among the several districts as county rates and levied as was then by law provided.

Within twenty days after the joint meeting each school district was to have a meeting to decide by a majority of votes whether they would raise for the current year a sum in addition to that determined by the delegates at the joint meetings to be applied to the common schools. This additional sum was certified to the supervisors or to the town council of boroughs, and was collected as township or borough rates were then by law collected. The supervisors or town council were given power to purchase, hold, receive and sell real and personal property for the establishment and support of the schools. The details of management were assigned to the board of school directors. It was made their duty to determine the number of schools to be operated in their respective districts; to cause suitable buildings to be purchased, erected or hired for schools; to appoint capable teachers at liberal salaries; to admit scholars; to visit the schools by two or more of their number at least once each month, and to cause the result of their visit to be entered in the minutes of the board; and to have the general superintendence of the schools in their respective districts.

In addition provision was made for the appointment of two competent citizens in each district as inspectors, whose duty was to examine teachers and issue certificates good for one year. The inspectors were to visit every school at least once in three months and as much oftener as they might deem proper, to inquire into the moral character, learning and ability of the several teachers employed. They also were required to make an annual report to the superintendent of public schools. Neither the inspectors nor the directors were to receive compensation for their services, but they were to be free from militia duty or from serving in any other township or borough office; but in case the incumbent was made a delegate to the annual meeting at the county seat he was entitled to receive out of the county treasury one dollar per day for attendance including the time spent by him traveling to and from the meeting. The secretary of the commonwealth was made superintendent of public schools, and his duties as then prescribed have remained unchanged except in so far as the creation of the county superintendency, the certifying of teachers, the establishment of State Normal schools, and the enactment of laws making attendance at school compulsory, made necessary an enlargement of his powers.

A supplement to the act of 1834 was approved by Governor Wolf on April 15, 1835, and by its provisions the office of inspector was abolished and all the duties transferred to the school directors. It also provided for the levying of the tax agreed upon by the minority at the joint meeting, said tax to be assessed and collected in the respective districts in the same manner as if a majority of the delegates had voted in the affirmative. It was provided that the tax should be levied on the articles on which the State tax was levied, and on all posts of profit, professions, trades, occupations or callings, not exceeding one and a half times the amount assessed on the same for county purposes. The collection of tax on unseated lands could be enforced as when assessed for county purposes. In all meetings of the people in the several districts no persons were allowed a vote except those entitled to vote for members of assembly.

At the next gubernatorial election George Wolf was defeated, owing in part to a division in his party on the school question. His successor was Joseph Ritner, who was mistakenly supposed by many to be hostile to the new school system, but who in fact proved one of its most earnest friends. The legislature of 1835-1836 increased the school appropriation to $200,000, and to the astonishment of both the friends and enemies, Governor Ritner proposed a still further addition of $600,000. In response to his suggestion an act was passed which appropriated $500,000, to be applied by the several districts either for the building, repairing or purchasing of school houses or for other educational purposes.

In 1836 an act was passed to consolidate and amend the several acts relative to a general system of education in the common schools. It was prepared by Dr. George Smith, chairman of the senate committee on education. He submitted his drafts to Thaddeus Stevens, Charles B. Trego and Almon H. Read, from whom he received several suggestions of importance. It was passed by the legislature and became a law June 13, 1836.

The new law enlarged and more clearly defined the powers and duties of directors in reference to school buildings, salaries of teachers, payment of expenses, school visits, and the creation of joint districts. It also defined the scope of the reports to be made to the superintendent of common schools. The directors were required to report the number and situation of the schools, the character of the teachers, designating whether they were males or females, the number and sex of the pupils admitted, the branches of study taught in the schools, the number of months the schools were kept open, the cost of the school houses (building, renting, repairing) and other expenses incurred in the maintenance of schools, together with such other information as might be beneficial in forming a just estimate of the usefulness of the schools. They were empowered to levy a tax not less than equal to nor more than three times the amount which the district was entitled to receive out of the annual State appropriation. The act abolished the joint meeting at the county seat and provided for an election in each township or district to determine whether the provisions of the system should be accepted. The power to purchase property was taken from the supervisors and vested in the directors, where it has since remained.

The act also made provision for the division of districts into sub-districts for separate schools, and for the annual election of a committee of three, who should have the appointment of a teacher for such sub-district. In case the sub-district failed to elect a committee, the power to appoint the teacher devolved upon the school board. The law of 1809 to educate the poor gratis was kept in force in the districts which did not accept the common school system.

A peculiar section was that relating to endowed schools, viz.: "Where a school is or shall hereafter be endowed, by bequest or otherwise, the board of directors of the district in which such school is located, are hereby authorized to allow such school to remain under the immediate direction of the regularly appointed trustees of the same and to appropriate so much of the district school fund as they may think just and reasonable; provided, that such school shall be generally conducted in conformity with the common school system of this Commonwealth."

Governor Ritner appointed Thomas H. Burrowes as secretary of the commonwealth, and the latter thereupon became, *ex-officio,* superintendent of common schools, in which capacity he made for himself a name that will live as long as the common school system shall endure. When his term of service was drawing to a close, Governor Ritner looked with satisfaction upon the work that had been accomplished, as is evident from the following paragraph in his last message:

"The condition of the means provided by the State for general education is so flourishing that little is required to be done by the present legislature. Within three years the permanent State appropriation to this object has been increased from $75,000 annually to $400,000. . . . Nor will this large outlay have been without its fruits. Instead of seven hundred and sixty-two common schools in operation at the end of the year 1835 and about seventeen academies (the latter in a state of almost doubtful existence), with no female seminaries in active and permanent operation, she has now five thousand common schools, thirty-eight academies, and seven female seminaries in active and permanent operation, disseminating the principles of literature, science and virtue over the land. In addition to these there are many schools, academies and female seminaries of a private character, equally useful and deserving in their proper sphere."

The years from 1839 to 1852 constituted a period of steady progress in the history of our common schools, and a firm foundation was then laid for later development. The system grew by inherent energy and the almost unaided efforts of the directors. The number of schools increased from 3,939 to 9,699; the number of teachers from 5,034 to 11,713; the number of pupils from 175,355 to 480,778; the tax levied from $385,355 to $982,196.22, and the total expenditure from $709,582.92 to $1,116,919.25.

In 1838 the legislature appropriated to common schools a sum equal to one dollar for each taxable inhabitant in the State; in 1852 the appropriation did not reach forty cents for each taxable inhabitant, the amount actually paid being $323,794.23 in 1838, and only $190,266.17 in 1852. According to Dr. Wickersham the cause of this decrease in the State appropriation must be looked for either in declining interest in education or a want of courage or vigor on the part of those charged with the general administration of the system. Of the work of the successive superintendents from 1838 to 1852 he says that they "were distinguished lawyers and politicians," whose interest in education or whose knowledge of school administration was not taken into account in their appointment.

Educational Revival.—The years from 1852 to 1857 were eventful in the educational history of Pennsylvania. They have been aptly styled the period of educational revival, during which the school department was made a separate branch of the State government; the office of county superintendent was created; the law for the establishment of State Normal schools was enacted; the State Teachers' Association was organized; the Pennsylvania School Journal was made the official organ of the department and of the Teachers' Association, and the first steps were taken towards the inauguration of a system of county institutes. We find as we trace the history of these agencies in detail that subsequent hands developed them to their present standard of efficiency, but the foundation of them all is found in the period of 1852-1857.

William Bainbridge

Naval officer; paved way (1800) for first treaty between United States and the Porte at Constantinople. In 1800 he commanded a frigate and sailed for Algiers; his vessel, the Philadelphia, grounded before Algiers, and he was captured, 1800; active in war of 1812

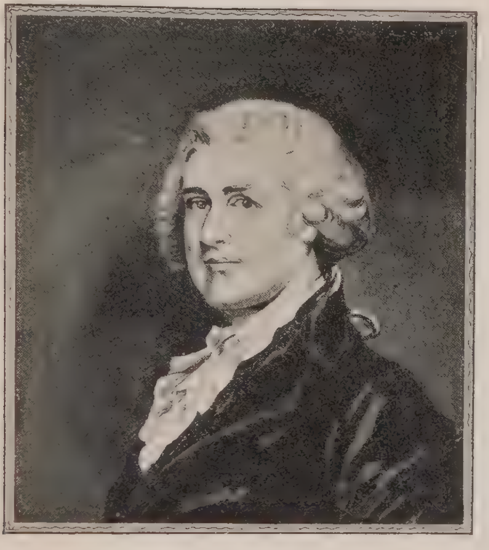
In his message of 1850, Governor Johnston said that the system of common schools needed modification, that it did not receive from the people the favor which a sound and enlightened scheme of education deserved, and he claimed that the evil must exist in the laws controlling its practical operation.

A convention of the friends of education met in Harrisburg on January 16-17, 1850. It was attended by men of influence and high social and political standing. Resolutions were adopted, favoring the establishment of two schools for the training of teachers, the organization of teachers' institutes and associations in every county, the creation of a department of education distinct from the office of the secretary of the commonwealth, the publication of a school journal by the department of education, and the establishment of the office of county superintendent. ("Hist. of Education in Penn.," pp. 495-96.) The proceedings of the convention were published in pamphlet form, and the resolutions adopted had an important bearing upon educational thought and progress.

In January, 1852, a staunch friend of popular education, William Bigler, took the oath of office as governor; Francis W Hughes, an able lawyer, became secretary of the commonwealth and *ex-officio* superintendent of common schools; and Henry L. Dieffenbach became clerk in charge of the department of common schools. Mr. Hughes held office about a year and during that time he made a report, pointing out, among other things, the need of more safeguards against the employment of incompetent teachers and urging the adoption of measures to increase the number and secure the services of such only as were competent. He suggested the appointment of a competent examiner or board of examiners for each county, and the division of the State into districts for purposes of supervision. He made a plea for better salaries, longer school terms, the employment of more women as teachers, the establishment of Normal schools, and the adoption of a plan for the instruction of teachers at gatherings similar to the teachers' institutes of the present day. He began the preparation of a revised code of school laws, based upon the needs of the system as revealed in the correspondence of his chief clerk with school boards and teachers throughout the State. This work was continued by his successor, Charles A. Black, likewise a lawyer. Charles A. Dieffenbach rendered valuable assistance in the original plan of the act of 1854. Few of its details were derived from the experience of other States. The various sections were drafted in answer to questions which had arisen in our own school system. It was indigenous to the soil, so to speak, and well adapted to remedy the evils of the former system.

The new act passed the senate by the bare majority of one vote, but in the house the majority was larger. It was regarded as an administration and not a party measure, and Governor Bigler is said to have declared with more than ordinary animation, that he "too keenly felt the want of facilities for good common school education to disregard the needs of the youth of the State for fear of personal consequences, and that he would sign the bill though it would sink him so deep in political oblivion that he would never again be thought of in connection with public life." ("Hist. of Education in Penn.," p. 499.)

Unfortunately, not all the proposed changes were enacted into law. The sections relating to Normal schools were stricken out in the senate committee; the section authorizing boards of school directors to select sites for school houses was defeated, and this important feature was first secured in the act of 1867. School boards were given the power to borrow money, to buy and sell property, sue and be sued, etc. Sub-districts were abolished. The idea of dividing the township into parts, each containing one school controlled by a local committee, had been borrowed from the school systems of New York and New England. The minimum school term was lengthened to four months. The superintendent was authorized to prepare a work on school architecture, and also to appoint a deputy, with power to act in his absence or during a vacancy. Orthography, reading, writing, grammar, geography and arithmetic were directed to be taught in every district. School directors were empowered to require instruction in additional branches, and to select the text-books to be used, all others being prohibited for the sake of uniformity. But the provision which afterward caused most discussion was that creating the office of county superintendent. In this Pennsylvania followed the lead of New York, where the county superintendency had been in successful operation from 1841 to 1847, when the office was abolished. (The office was subsequently restored and still exists under the name of county school commissioner.)



Alexander James Dallas

Author; editor; statesman; secretary of the commonwealth 1791-1801; United States district attorney 1801-1814; secretary of the United States Treasury 1814-1816

County Superintendency.—On May 10, 1854, the state superintendent forwarded copies of the amended school law (approved

May 8) to the commissioners of the various counties, and in an official circular he drew attention to the creation of the office of county superintendent as the most important feature of the act. Before the creation of this office any justice of the peace, lawyer, minister, or other person, was considered competent to examine the applicants for schools. A teacher's certificate was simply a license to teach; it did not indicate the scholarship of the applicant.

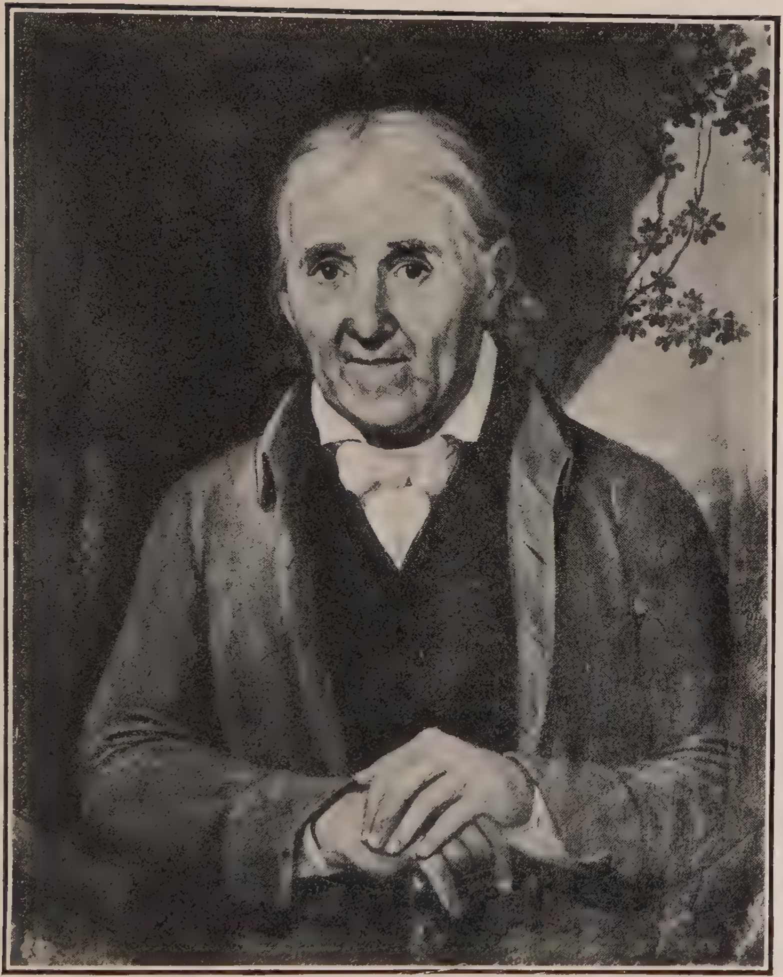
To remedy this evil the superintendency was created. Teachers within the same county were thereafter examined by a sworn officer, whose duty it was to visit schools and note the quality of the teaching. The law creating the office, though right in principle, met with unexpected opposition. Here was a new salary to be paid and incompetent teachers were obliged to change their vocation. Ex-State Superintendent Hickok calls this period "one of the most disturbed and difficult and critical periods ever known in our school history. Its like can never be seen again." The fact that Governor Bigler had signed the act of 1854 helped to defeat him at the next election, and his successor is said to have remarked that it was about as much as a man's life was worth to stand by the county superintendency in those days. Effort after effort was made to abolish the office. A special bill passed both House and Senate excepting several counties from the operation of the law. Mr. Hickok was sent for, that the governor might hear what could be said against the bill. "How can I administer a school system if you smash its backbone," was his exclamation as he entered the executive chamber. Dismay sat upon the faces of the politicians who were present. It was finally agreed that Mr. Hickok should write out a statement of the reasons for a veto and that Mr. Curtin should formulate the veto message. When the message appeared, it spoke of special legislation in its worst form, but did not contain a word of what Mr. Hickok had written. The governor's veto was sustained and Pennsylvania did not join the States which abolished the office of superintendent after it had been established by law.

That our own State did not recede from its advanced position is partly due to a convention of superintendents, which had been called to meet at Harrisburg on April 11, 1852, and which was in session until the 13th. Petitions asking for the repeal of the law creating this office came from nearly every county in the State. Dr. Wickersham says that Franklin county sent eighteen petitions, Montgomery seventeen, Chester sixteen, Crawford seven, Westmoreland seven, Dauphin eight, Berks seven, and others a less number. The number of signatures was alarming. Mr. Curtin determined to bring the members of the legislature face to face with the superintendents themselves. Of the forty-one who responded to the call no one was more enthusiastic than the young superintendent from Lancaster, James P. Wickersham. He gave a glowing account of the interest of the people in the examinations, how they followed the superintendent from school house to school house, trying to get the best teachers. An afternoon meeting was held in the house of representatives, at which Dr. Thomas H. Burrowes delivered an address, and reports of work done were made by Nicholson of Beaver, Barr of Hutingdon, Wickersham of Lancaster, Gow of Washington, and Shelly of Cumberland. The convention spent two days in discussing the details and difficulties of examination and supervision. Before it adjourned Dr. J. M. McClintock, chairman of the committee on education, in the Senate, made a speech assuring the superintendents that they need have no fears of repeal at that session, and that no matter what blow should threaten, a barrier had been erected in the Senate strong enough and high enough to resist assault.

Governor Pollock in a powerful speech declared that during his administration there should be no backward step in school affairs; he further said that if any of the pending bills that had been warmly discussed should be passed, there was another branch of the government little farther north (indicating the executive building) that might have something to say on the subject. Dr. Burrowes instantly remarked to Mr. Hickok, who was sitting by his side: "That's the first time I ever knew a governor of Pennsylvania threaten to veto a bill in advance of its passage."

Frightened by the lions in their path, as Dr. Wickersham calls the veto of the governor and the majority in the senate, the members in favor of repeal dropped their general bill and inserted a proviso in the general appropriation bill to the effect that the whole amount of the school appropriation should be distributed to the counties pro rata, and where any county refused to employ a county superintendent, the amount due said county should go into the common school fund, a proviso that was adopted by a vote of fifty-four to thirty-one in the house and that could not be reached by veto. The senate committee struck out the clause and efforts to restore it and to insert it as a new proposition both failed by the decisive vote of five yeas and twenty-two nays. Dr. McClintock's senate barrier had proven strong enough for the assault and the county superintendency was saved.

The method of selecting county superintendents at a triennial convention of school directors was wisely conceived and has shown itself superior to the method of choice by popular vote. Separated from every other election by being held on the first Tuesday in May, and thus freed from the entangling alliances of county politics, the choice has generally resulted in the getting of the right man for the right place. Legislation can instil neither honesty nor infallibility into a school director, but it can remove him as far as possible from influences which aim at something outside of the efficiency of the schools. When new offices are created, the payment of the salaries is a question apt to agitate the public mind. The salaries of sixty-five new officials had to be paid out of the school appropriation, which was not large in those days. The salary which the directors voted in some counties was ridiculously low—in one case being only two hundred and fifty dollars.



John Gottlieb Ernestus Heckewelder

Missionary; assisted war department in arranging treaty with Indians 1792 and 1793; lived in Bethlehem 1810 to 1823; student of languages, manners and customs of Indians and author of historical books and papers on kindred subjects. Reproduced for this work from a canvas in American Philosophical Society

During the session preceding the second election of county superintendents, Andrew G. Curtin rendered conspicuous service "in organizing a movement in the house to increase the annual State appropriation to common schools from $230,000 to $300,000 to give more margin for a needed increase of salaries and to prevent an open revolt on the part of the oppressed taxpayers against the school law of 1854, many of whom had been paying twenty-six mills upon the dollar every year for three successive years for only a four months' term. It was carried in the house, and Mr. Curtin returned to his office very much relieved, but greatly surprised and disturbed by the discovery, on the floor of the house, of active opposition from prominent educational sources. The senate cut down the amount to $280,000, and that amount was carried by a majority of a single vote, the rich eastern counties voting solidly against it, except Senator Joseph J. Lewis of Chester county, who, seeing the peril of the situation, gave the casting vote in favor of the bill and thus saved the day. If the bill had been defeated, the county superintendency could not have been maintained."

When upwards of sixty new offices were created the question arose out of whose purse their salaries were to be paid. At first the money was taken out of the general school appropriation. Mr. Wickersham wishing to increase the school appropriation, succeeding in having a special appropriation made for the payment of the salaries of county superintendents. In 1878 Hon. John Q. Stewart introduced a bill fixing a minimum salary of eight hundred dollars and basing the compensation of county superintendents upon the area of the county, the number of schools to be visited, and the average length of the school term. Directors were given power to increase the salary above the amount fixed by law, the increase being taken from the aggregate appropriation due said county. In 1893 the minimum salary was increased from $800 to $1,000. In 1899 an attempt was made to fix the minimum salary at $1,500, but the bill, after passing the house and senate, was vetoed by the governor on the ground of a lack of sufficient funds in the State treasury. In 1901 another bill was introduced and passed to equalize the salaries. The law thus enacted makes the salary ten dollars for each of the first one hundred schools under a superintendent's jurisdiction, five dollars additional for each school above one hundred and not over two hundred, and two dollars additional for each school above two hundred. Three provisos are added: First, that the salary shall in no case be less than one thousand nor more than two thousand dollars per annum; second, that in all counties having twelve hundred square miles of territory, or a school term exceeding seven and one-half months, the salaries of the superintendents shall not be less than fifteen hundred dollars; and third, that a convention of school directors assembled for the purpose of electing a county superintendent may vote him a salary greater than the amount he would receive by this act, such increase to be in all cases taken out of the school fund appropriated for the county thus voting.

The salary in conjunction with the intellectual and professional qualifications required by law before a superintendent can be commissioned, has in nearly all cases sufficed to secure for the office men and women of superior talent and executive ability. The question is sometimes asked: How does a superitnendent earn his salary? It is, of course, possible for this official to pursue a vigorous policy at doing nothing and to spend his time in coddling the directors so as to pave the way for his re-election. However, it is to be said that the superintendents who have been most efficient in the discharge of their duties have as a rule been retained in office for the longest period. In many counties rotation in office is no longer applied to the superintendency. In 1899 a bill introduced by Representative Palm, of Crawford county, was passed to compensate directors for their expenses in attending the triennial convention. One purpose was to put an end to the custom which had grown up in some counties of expecting the superintendent to pay the dinner and traveling expenses of the directors at the convention electing him. This legislation is so recent that its wisdom remains to be tested.

When the act creating the county superintendency was passed, Philadelphia, Lancaster and Carlisle were excepted from its provisions. Lancaster voluntarily accepted the law. Philadelphia elected a superintendent in 1884, and Carlisle in 1895.

The cities gradually began to feel the need of supervision by experts. An act was passed in 1867 to enable the cities and boroughs, with a population of ten thousand or over to elect their own superintendents. In 1881 the law was amended to include boroughs with a population of five thousand, and in 1885 to include townships with the same population.

The salaries of city, borough and township superintendents are paid out of the local treasury. This has caused objection from several cities; but when it is borne in mind that the method of distributing the school appropriation works on the whole in favor of the growing centres of population and against the sparsely settled districts, not much objection can be raised against the present policy, and no voice of opposition has in recent years been heard against payment of the salaries of county superintendents by a special appropriation.

In 1901 an act was passed providing for the election of supervising principals in townships with a population of four thousand or more. The duties of these officials are confined to supervision and do not include the issuing of provisional and professional certificates nor service upon the State boards appointed to conduct annual examinations at the State Normal schools.

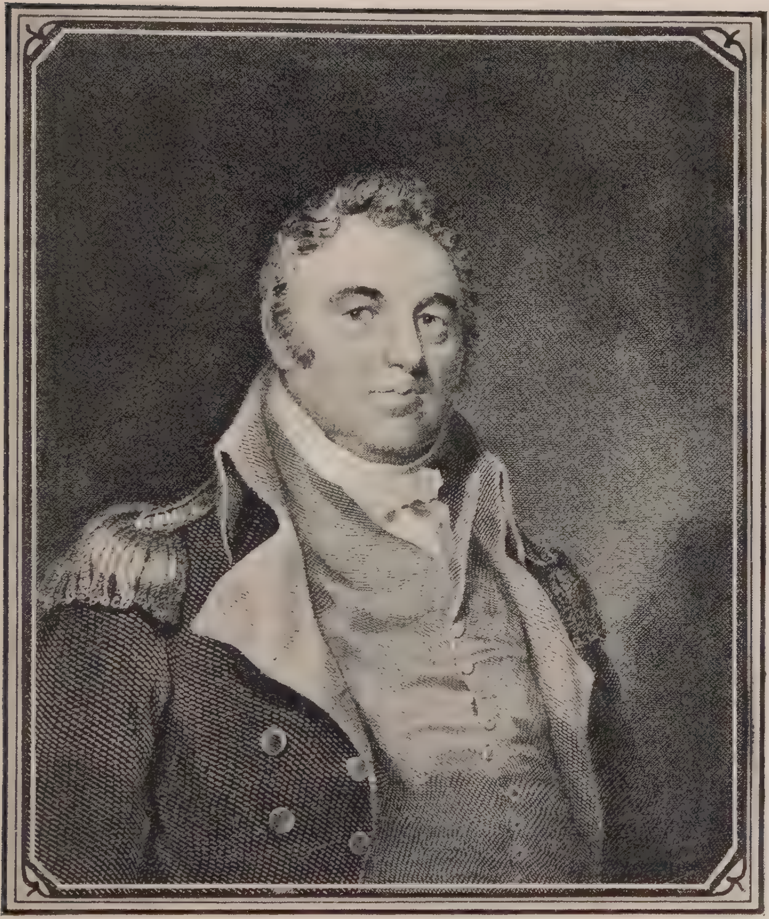
State Normal Schools.—The thorough and practical training of teachers for work in the public schools has been a subject of earnest discussion in Pennsylvania for more than a hundred years, About the middle of the eighteenth century Benjamin Franklin, in an appeal to the common council of Philadelphia for aid in establishing an academy (since developed into the University of Pennsylvania), pointed out the need of competent schoolmasters, and the possibility thereby of supplying such as can teach reading, writing, arithmetic, and the grammar of the mother tongue. Both the Friends and the Moravians had succeeded in fitting many persons for teaching. The legislature made moderate appropriations to a number of colleges on condition that they give free tuition to a specified number of students preparing to become teachers. Lafayette college during the presidency of Dr. George Junkin erected (in 1838) a building for a Model school and provided special courses for teachers. This is claimed to have been the first undertaking of its kind in the United States in connection with a collegiate institution, and it failed through lack of proper appreciation and material support. In 1843, when the law making appropriations for this purpose was repealed, only thirty students who were preparing to teach were reported from all the colleges in the State. It is not difficult to explain why the experiment of preparing teachers in our colleges to take charge of the common schools was a failure. The salaries paid to those in charge of our common schools do not attract the college-bred man. He can find more lucrative employment in the older professions and in other vocations. Even now, when the salaries paid in high schools furnish more adequate compensation, only three hundred and sixteen college graduates are reported as teaching in the public schools. Although permanent certificates have been granted without examination since 1873 to the graduates of recognized colleges, after three years' teaching in the public schools, only about nine hundred persons have applied for this desirable grade of certificate. Among thirty thousand teachers this comparatively small number of college graduates amounts to little more than a drop in a bucket of water. Yet as a drop may suffice to color the entire bucket of water, so to their credit it must be said these college graduates in the public schools are making themselves felt through the whole school system.

As a source of supplying competent teachers for the common schools, the superintendents were obliged to look elsewhere. To fill the places of the incompetent teachers who had been weeded out of the schools through the annual examinations and as a means of improvement for those who were ambitious to fit themselves for better work, Normal Institutes were established, sometimes under the control of the county superintendent. This created sentiment in favor of and paved the way for the State Normal schools which had been recommended in every report of the school department from 1836 to 1857.

All these reports, except the last, favored schools for the training of teachers owned, controlled and supported by the State. So long as an appropriation of money was needed to carry out the idea, it failed to gain much favor with the legislature. Finally, in 1855, Mr. Benjamin Bannon, of Pottsville, long in official connection with the common schools as a school director, wrote a lengthy letter to Governor Pollock in which he suggested the division of the State into twelve or fifteen districts and the establishment of a Normal school in each, partly at private expense, and yet having State recognition and support. The latter found favor with the school authorities at Harrisburg and was subsequently forwarded to Dr. Burrowes for consideration in drafting the Normal School law. Without doubt the views expressed in this letter led him to modify his views. In framing the Normal sections of the school bills of 1853 and 1854 he favored Normal schools owned and exclusively supported by the State. In August, 1856, he announced that he had reached the conclusion that Normal schools, like other professional schools, ought not to be established by and at the expense of the State, and should be no further controlled by the State than is necessary to give value and authority to their diplomas. On this basis the act of 1857 was prepared by Dr. Burrowes, and as the plan did not require an immediate appropriation, the bill passed both houses and received the signature of Governor Pollock on May 8 of that year. In transmitting his draft of the bill to Mr. Hickok, Dr. Burrowes wrote: "If you succeed in putting this bill through, it will be your best winter's work, as it has been my best Sunday's work for many a year."

The Normal school act was drawn on truly colossal scale. To many the requirements appeared extravagant at the time, but the growth and popularity of the several schools have far outstripped the original expectations. The act divided the State into twelve districts (a thirteenth was subsequently created), provided for their establishment and management by private corporations composed of stockholders or contributors, specified as essential to recognition grounds to the extent of ten acres, buildings large enough to accommodate three hundred boarding students, a hall capable of seating a thousand adults, a faculty of at least six professors of liberal education, and a model school with accommodations for one hundred pupils. No financial inducement was held out for the establishment of Normal schools. It was believed that the power to grant licenses to teach would bring them patronage and make them prosperous. The original provision that the act should become operative as soon as four schools complied with the conditions and applied for recognition was perfected by a supplementary act of 1859, providing a way for the recognition of one school without waiting for the application of four schools.

The carrying out of this legislation in regard to State Normal schools was a work of years. Planned on a colossal scale, the private parties who undertook to erect them were obliged to go heavily into debt. The attendance of students and the revenue did not suffice to pay running expenses and interest on the debt. Men like Abraham Peters of Millersville, Hon. Silas M. Clark of Indiana, and Rev. D. J. Waller of Bloomsburg went security for large sums of money to save from the hands of the sheriff the schools with which they were connected as trustees! Time has justified their faith in these schools. The several schools grew in public favor, legislative appropriations lifted them out of pressing debts, and to-day the State points with pride to the State



Richard Dale

Lieutenant in Virginia navy 1776; captured and imprisoned by British while in Revolutionary war service, 1777; commissioned lieutenant 1781; became captain 1794; commanded the Mediterranean squadron 1801; died, 1826

Normal schools. A detailed history of the trials, struggles and sacrifices through which the several schools passed until they finally reached the era of prosperity, would fill volumes. Such details must be left to the local historian. In order that the State legislature might be induced to come to the rescue by liberal appropriations, a change was made whereby six out of eighteen trustees were appointed by the State superintendent, and mortgages covering the grounds and buildings were given in favor of the State to guard against the sale of the same in the interest of the stockholders or contributors. This finally made it difficult for the trustees to make temporary loans. A few leaders of the type of Hon. S. M. Wherry exposing the folly of requiring mortgages in return for money spent in the preparation of teachers, a new policy was adopted by the legislature in which the mortgage clause was struck from the appropriation bills.

Under the administration of C. R. Coburn as State superintendent was inaugurated the policy of giving students fifty cents a week towards the payment of their tuition, and fifty dollars on graduation. The annual appropriations for this purpose gradually increased from $10,000 in 1866 to $130,000 in 1899. A shortage of available funds impelled the governor to veto this special appropriation for the year beginning June, 1900, but in 1901 the legislature set apart from the general school appropriation funds to provide free tuition for students seventeen years of age or more who elected to pursue the teachers' course of study.

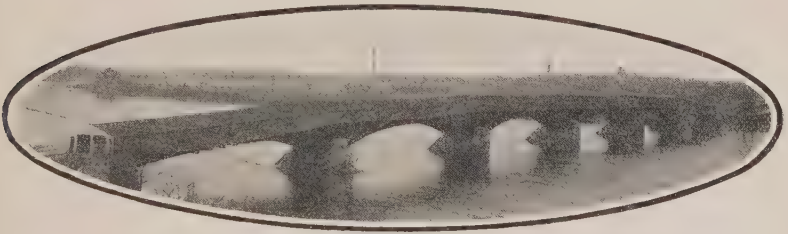
The course of study in these institutions is arranged by a convention of principals. Although provision was made for courses of three and four years' length, a majority of students stopped at the end of the two years' elementary course. Largely through the efforts of Dr. E. O. Lyte, an educator of prominence, it was decided at the convention of principals held at Harrisburg in November, 1900, that after June, 1902, no more students should be graduated in the two years' course, and in its place a regular course of three years was adopted.

The following table shows the name and location of each of the Normal schools, the year of recognition by the State, the value of property and furnishings, and the number of students attending in the Normal and Model school departments during the school year 1901-02.

Name of School	Date of Recognition	Valuation	Normal Department	Model Department	Total
Millersville	1859	524,032.10	814	205	1,019
Edinboro	1861	177,000.00	561	115	676
Mansfield	1862	305,529.00	512	138	650
Kutztown	1866	351,450.00	550	217	767
Bloomsburg	1869	355,218.97	638	127	765
West Chester....	1871	537,279.00	731	200	931
Shippensburg ...	1873	249,500.00	326	80	406
California	1874	248,073.04	488	376	864
Indiana	1875	277,927.01	616	206	822
Lock Haven.....	1877	271,100.00	410	143	553
Clarion	1887	272,725.00	509	32	541
Slippery Rock...	1889	254,959.95	566	239	805
East Stroudsburg	1893	89,306.87	374	170	544
		$3,914,100.94	7,095	2,248	9,343

Dr. Edward Brooks, superintendent of schools of Philadelphia since 1892, wrote most of his books and treatises on education while he was connected (as professor and principal) with the Millersville Normal school. Of the principals now serving, Dr. E. O. Lyte has been president of the National Educational association; Dr. D. J. Waller, jr., has been state superintendent; Dr. G. M. Phillips declined the office when it was tendered to him. Dr. G. M. D. Eckels and Dr. J. R. Flickinger have been members of the Pennsylvania legislature (the latter was also a member of the Colorado legislature); Drs. Noss, Maltby and Welsh have been engaged in Normal school work for several decades. Professor Rothermel has achieved a reputation for executive ability as principal of the Keystone Normal school at Kutztown. Professors Bigler, Kemp and Wier were more recently elected to the position of Normal school principal.

The buildings at Bloomsburg, Lock Haven and Mansfield were destroyed by fire. The first buildings at Kutztown were faulty in construction and have been rebuilt and enlarged. All the schools have recently enlarged and improved their facilities for practical work.



Old "Camel Back" Bridge across the Susquehanna at Harrisburg

Built by Theodore Burr, 1812-1817; damaged by flood, March 2, 1902, and removed same year. Engraved for this work from a photograph in possession of Historical Society of Dauphin County, Pennsylvania

A Separate School Department.—At first the department of public instruction was under the control of the secretary of the commonwealth, who was ex-officio superintendent of common schools. A separate school department was a cherished idea with the friends of education throughout the State, and had been officially and earnestly recommended by almost every secretary of the commonwealth from 1838 to 1854. It had been warmly urged by the educational meeting at Harrisburg in 1850, by the State Teachers' association and other educational gatherings. There was a growing belief that the magnitude and complexity of our public school interests justified the creation of such a department. In his second annual report, Mr. Curtin suggested some reorganization to enlarge its powers and to increase its efficiency.

A bill for the purpose was introduced into the house during the session of 1857 by the chairman of the committee on education and passed both houses without calling the ayes and nays. Deputy Superintendent H. C. Hickok's name was sent into the senate to fill the new position, and was unanimously confirmed. The officer was known as superintendent of common schools and the term of service was fixed at three years. The method of appointment by the governor and confirmation by the senate was criticised by Dr. Wickersham in his first annual report. He recommended the method of selection by popular election. After his unsuccessful canvass for the congressional nomination in Lancaster county he probably reached the conclusion that the people sometimes make mistakes in not selecting the best man, and the recommendation was not repeated. His long term of service and the appointment of his successor, Dr. E. E. Higbee, by three successive governors are abundant proof of the wisdom displayed by those who drafted the bill. The constitution of 1874 lengthened the term to four years, changed the title to "Superintendent of Public Instruction," and made the incumbent irremovable during the term for which he was appointed, except by impeachment. Upon the death of Dr. Higbee, Rev. D. J. Waller, Jr., D. D., was appointed to serve out the unexpired term. As is usual in appointments made when the legislature is not in session, his commission was worded to expire on the last day of the ensuing session of the senate. The name of Dr. Z. X. Snyder was sent to the senate as his successor, and rejected by a decisive vote. A legal battle occurred to decide who was entitled to the office. The Supreme court finally decided that Dr. Waller was entitled to serve out the unexpired term. This decision gave the office a degree of stability and independence equal to that of an officer who holds his place by popular election.

Three times have appointments been made across party lines, and a fourth governor is on record in black and white as declaring his determination to appoint the best man regardless of partisan politics. This would not have been possible under the plan of popular election. In States which elect the head of the school department, the section from which no one has been put upon the State ticket is given this place, usually the last on the ticket; and thus men of very inferior qualifications have sometimes been chosen by vote of the people.

At first the superintendent had only two clerks and a messenger to assist him. By the act of 1854 he was empowered to appoint one of these a deputy, with power to act. In 1874 the working force was enlarged to two deputies, three clerks and one messenger. In 1895 the employment of a stenographer was authorized. Want of space makes it impossible to name all who have rendered valuable service in the school department. However, some names deserve more than a passing word of recognition.

Henry C. Hickok was connected with the school department during a period of about five and a half years. Born April 26, 1818, in Cayuga county, New York, and brought to Union county, Pa., with his father's family in 1822, he studied law and was admitted to the bar at Harrisburg, Pa., April 27, 1840. He was called by Governor Pollock to the office of deputy superintendent of common schools, January 19, 1855. The act to separate the department of public instruction from that of the secretary of the commonwealth, which he prepared, became a law on May 20, 1857. On the first Monday of June in that year he became state superintendent of common schools and held the office for three years. He helped effectively to secure the passage of the act under which thirteen magnificent State Normal schools have been established. His untiring vigilance and zeal, with Governor Pollock's unflinching support, enabled him to contribute materially to the protection of the act of 1854, and of the county superintendency which was unpopular to a degree that the present generation finds it difficult to understand. The act of 1854 placed our system far in advance of other State systems which have either never had the office of county superintendent or never specified the professional and literary qualifications of those holding the office. The effect of the examinations by county superintendents was soon felt; the office being firmly sustained grew in favor; its unpopularity gradually passed away; and before he died at the age of four score years (died December 16, 1898), he had the satisfaction of seeing his policy fully justified by the results and approved by every student of educational history.[1]

Dr. Thomas H. Burrowes was twice the head of the school department; first from December 15, 1835, to January 15, 1839, as

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[1] From a private letter of Ex-Superintendent Hickok:

One day while brooding despondently over the formidable obstacles in the way of the success of the new school law, the governor informed me, while in the executive chamber on an errand, that he had that morning received an invitation from the Reading School board to be present at a public reception in that city to be given in his honor by the board, "and," said the governor, "I have a great mind to accept it." I was electrified. This was just the opportunity that was needed to define his position then and roll back the tide of opposition.

I told him I thought it was a good idea, and advised him to go by all means. He said he wanted me to go along with him to represent the school department, and I made no objection. At the appointed time we found ourselves in the presence of a select audience embracing the very élite of the place, the intelligence, culture, refinement and controlling influence of that historic city. Hon. William M. Hiester, speaker of the State senate then and the year before, was chairman of the meeting.

The governor wanted me to speak first. I told him that I should break ground squarely and unreservedly for the county superintendency and the school law of 1854. "Take your own course," said he, "and I will back you up." The audience was an inspiring one and the opportunity such as might rarely present itself, and, making my remarks decidedly *ad rem,* I endeavored to grapple with the objections and the sentiment of the time, and didn't mince matters. I talked, I suppose, about twenty-five minutes, and when I resumed my seat, which was next to Chairman Hiester, he was kind enough to say that I had given some very good reasons for people to change their minds about the school law of '54 and the county superintendency. The governor followed with one of his genial, taking colloquial speeches, for which he was remarkable in his prime, and sat down amidst great applause.

I did not see any of the Reading newspapers and don't know what the reporters made of the meeting, but the news of it was flashed over the State on the wires, and encouraged the friends of the common schools everywhere. They began to take heart and, if the administration was going to sustain the new school law, they would roll up their sleeves to sustain the administration. This was a great point gained.

On our return we had not been on "the Hill" half an hour before we had some very emphatic evidence that the meeting had produced effect. I was sitting at my desk in the department, which was in the southwest room in the executive building, on the second story, just north of the Capitol, facing the open door at the northeast corner of the room, when a clerk in the secretary's office passed my door on his way from the governor's private office. He hailed me in pass-secretary of the commonwealth, and again from 1860 to 1863, by appointment of Governor Packer. At the time of his first appointment he was not conversant with the details of school affairs, but he felt that he must either master the situation or fail in the proper discharge of his duties. Although as a member of the house during the sessions of 1831-3 he had voted with the opponents of a general system of education, he afterward became a warm friend of the schools, and at the end of his long, useful career he was known as one of our foremost educators, then being president of the State Agricultural College. Dr. Burrowes died in 1871.

Charles R. Coburn was the first professional teacher placed in the office of superintendent. In 1857 he was commissioned

ing: "They are after you," he said. "Who's after me?" said I, pricking up my ears. "The politicians," said he. I laid down my pen, and sat back in my chair, and listened curiously to what he had to say. He told me that whilst he was in the governor's office a delegation of influential politicians, belonging to or affiliated with the administration, called upon the governor to protest against his going out to champion the school law and defending the county superintendency. I listened intently to his story.

Governor Pollock was sitting in his arm chair and, when he discovered their errand, he leaned his elbow upon the left arm of the chair, and resting his left cheek on his forefinger, looked at the speaker curiously, as if he wondered whether he understood himself, but made no remark until the latter, realizing that he wasn't making the impression upon the chief executive that he expected to make, proceeded to attack me, saying, "Why Hickok will ruin your administration if things are allowed to go on this way."

With that the governor sprang to his feet and, extending the digit of his right hand towards the delegation, exclaimed with flashing eyes and an emphasis that left no room for misapprehension, "Gentlemen, I will see every other part of my administration go down before I will suffer the school department to go down."

This ended the conference and the committee left with the discovery that the socially genial and pleasant governor was by no means a nose of wax, and that when he had once made up his mind upon any important question of principle or policy there was an end of all discussion, that you could no more shake his purpose, no matter what the opposing odds, than you could move Gibraltar from its base with a feather duster. At first I did not feel quite sure that that committee might not be able to persuade the governor to modify his procedure somewhat, but when they proceeded to threaten him, I sat back in my chair perfectly content, for, like increased pressure upon an arch, every attack upon him of that kind would steel him more inflexibly against them.

I have never given the names of that delegation. It is not necessary at this late day besides most of them are under the sod and I would not disturb the ashes of the dead. The spokesman of the party is still living and prominently influential in public affairs, though holding no office, but it makes him very uncomfortable to hear any allusion to that episode. I have never mentioned his name in connection with it and never shall. He afterwards rendered good service in the cause and that atones for his error of judgment in that instance.

superintendent of Bradford county, and while serving in that capacity was chosen president of the Pennsylvania State Teachers' association. He became State superintendent on the first Monday of June, 1863. During his administration State aid was first given to students preparing to teach. Mr. Coburn was a conservative head of our educational department and gave excellent service in maintaining the efficiency of the school system.

Dr. James P. Wickersham was appointed superintendent by Governor Curtin in 1866, and assumed full charge of the department on the first of November. He held the office through successive appointments until April 1, 1881, a period of fourteen years and five months. He became county superintendent in 1854, and served as principal of the State Normal school at Millersville for ten years. His long and varied experience as a teacher, and his familiarity with all the details of the system fitted him in an eminent degree for the duties of the higher position to which he was called. The details of the supplementary act of 1867 came from his pen, and he did much to perfect the system and to introduce it in every portion of the State. Dr. Wickersham died March 25, 1891.

Dr. E. E. Higbee resigned the presidency of Mercersburg College, when he was appointed (April, 1881) to take charge of the school department. He held the office of superintendent by successive appointments until his death, December 13, 1889. To the fullest possible extent he favored the policy of delivering addresses in all parts of the State, which had been inaugurated by Dr. Burrowes and Superintendent Hickok, a custom which has been followed to this day by his successors. He did much to encourage the erection of better school houses and to inspire the teachers with loftier ideals of scholarship. In 1887, during the administration of Dr. Higbee, the legislature voted an increase in the annual appropriation to one and one-half million dollars, and in the same year the minimum school term was extended from five to six months.

D. J. Waller, Jr., D. D., succeeded Dr. Higbee in the State superintendency. During his term of office the annual school appropriation was increased to five million dollars, and subsequently another half million was added. When he was appointed, the practice of having divided school terms prevailed in many districts in the northern tier of counties. He advocated continued school terms and claimed that the law did not sanction a division of the school year into two or three short terms, as was done by school boards in certain districts, and now there are no divided school terms in Pennsylvania. In the discharge of his duties he visited all parts of the State, addressing teachers' institutes and attending high school commencements.

Nathan C. Schaeffer, present superintendent of public instruction, was first appointed in June, 1893, by Governor Pattison. In response to the wishes of educators generally he was reappointed by Governor Hastings and again by Governor Stone. As evidence of the fact that the school department has been lifted above the mutations of politics it should be mentioned that Hon. Henry Houck has held the office of Deputy Superintendent for more than thirty years. He has addressed more teachers' institutes and poured more sunshine into the vocation of teaching than any other educator in America.

The succession of superintendents of common schools[1] and of superintendents of public instruction is as follows:

Superintendents of Common Schools.—James Findlay, December 17, 1833; Thomas H. Burrowes, December 15, 1835; Francis R. Shunk, January 15, 1839; Anson V. Parsons, January 25, 1842; Charles McClure, February 20, 1843; Jesse Miller, January 21, 1845; Townsend Haines, July 29, 1848; Alexander L. Russel, January 25, 1850; Francis W. Hughes, January 21, 1852; Charles A. Black, March 14, 1853; Andrew G. Curtin,

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[1] It will be remembered that previous to 1857 the secretary of the Commonwealth was *ex officio* superintendent of common schools. Mr. Hickok was the first incumbent after the school department was separated from the secretaryship.

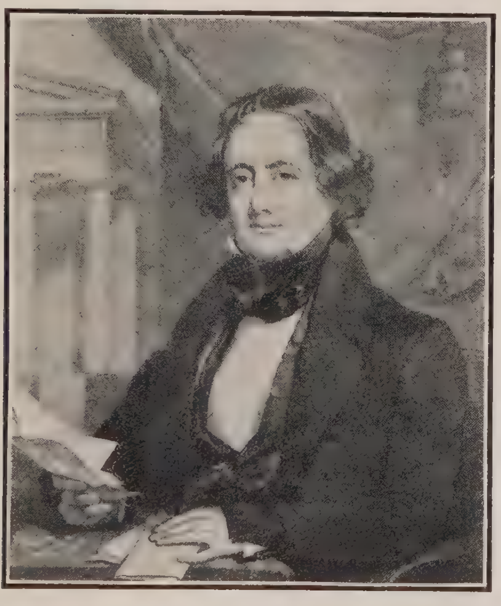
January 17, 1855; Henry C. Hickok, 1857; Thomas H. Burrowes, 1860; Charles R. Coburn, 1863; James P. Wickersham, 1866-1875.

Superintendents of Public Instruction.—James P. Wickersham, June 1, 1875; E. E. Higbee, April 1, 1881, died in office December 13, 1890; Dr. D. J. Waller, March 1, 1890; Nathan C. Schaeffer, June 1, 1893.

Teachers' Certificates.—The development of the system of granting licenses to teach forms a chapter of interest in the educational history of Pennsylvania. The various grades of certificates were brought into existence through the needs of individual schools. In no other material respect is our own system so little indebted to the example of other States. The act of 1834 prescribed that no certificate should be given any teacher unless the applicant was qualified to teach reading, writing and arithmetic.

Soon after the election of the first county superintendents State Superintendent Black called a convention at Harrisburg and thirty-six counties responded. Previous to the organization of the convention the superintendent delivered an address, in the course of which he said: "It is not often that such a body of men, for such a purpose, has convened at the State capital. Conventions, it is true, are frequently held at the seat of government, mostly for political and sometimes for moral and religious purposes, but seldom for the advancement of the cause of education. It is a rare thing—but, I trust, to be rare no longer—for a body of men, like those around me, to meet for the sole purpose of giving encouragement and aid to our common school system. This I feel will be but the beginning of a long series of similar meetings; and from the awakened interest in the public mind, I augur a new era, indeed, for common schools. It rests with you, gentlemen, and other friends of the cause throughout the State, to foster and encourage this feeling; to go forth with a brave spirit and earnest purpose, and to make our common school system what it can and should be, the pride and glory of the Commonwealth."

A part of this prophecy has been fulfilled. Not a year passes without two or three meetings for the advancement of the common schools. The convention of Normal School principals and State conventions of school directors meet annually at Harrisburg, and the convention of city and borough superintendents meets there during the years in which the legislature is in session.



Nicholas Biddle

Financier; editor; member State Legislature 1810-1811; started the legislative agitation for a State public school system; advocated recharter of the United States Bank; State senator during War of 1812; president re-chartered United States Bank; aided in establishment of Girard College

At the first convention of county superintendents a number of committees were appointed to make reports. One of these made a report through its chairman, Dr. Wickersham, in which three grades of certificates were recommended, corresponding to primary, secondary and high schools. The school department approved the action of the convention in regard to provisional certificates, but instead of issuing forms for the other grades, it recommended a form intended for professional teachers.

In reference to the general qualification of teachers a published circular of the department further says: "The examination of teachers will be a responsible duty and great judgment must be exercised. The object should be to ascertain the applicant's general knowledge in the branches named in the law, and in such other branches as may be indicated by the directors, and his skill in the art of teaching—not to embarrass or confuse with perplexing questions. It is true that this knowledge and skill can only be arrived at by practical illustrations; but then it must be perfectly obvious that a person may be an accomplished scholar in all the branches named and well skilled in the art of teaching, and yet be unable to answer at the first blush some novel question in arithmetic or English grammar, or to give the boundary of some obscure country in a distant part of the globe."

Early in his term Superintendent Burrowes endeavored to raise the standard of qualification used in certificating teachers and make it more uniform throughout the State. To this end he issued instructions to county superintendents, first insisting upon the adoption of a minimum standard below which no certificate should be granted, and then naming in detail the degrees of scholarship in the several branches taught in common schools requisite, in his judgment, as conditions for granting the different kinds and grades of certificates.

In speaking of the old form of teachers' certificates in contrast with the new, Dr. Burrowes said: "It is somewhat remarkable that the same officer (Dr. Wickersham), who devised this then wise expedient, has had, as State superintendent, the privilege as well as the duty of taking the first effectual step towards rendering the teacher's certificate what it should be, an evidence of full qualification and permanent standing in a learned profession."

In 1867 a new grade of certificate was authorized—called the permanent certificate—in the granting of which it was desired that the school department, the superintendents, the directors and the teachers should have a voice. The professional certificates then in the hands of teachers were annulled, although superintendents were given power to renew them without examination. This legislation was justified by County Superintendent Person at the meeting of the State association at Allentown.

In theory the granting of permanent certificates seemed to be a wise plan to make teaching a regular profession, but in practice it opened the door for the admission of many iniquitous practices. To remedy the evil an act was passed requiring questions and answers to be sent to the department of public instruction before the permaennt certificates were issued. At times the efficiency of county institutes was destroyed in the excitement of the contest for membership upon the examining committee, and to repair this defect a law was passed in 1895 whereby the appointment of the committee was placed in the hands of the State superintendent.

Several grades of certificates came into existence through the development of the Normal school system. At first three courses were established, known as the elementary, the scientific and the classical, for which corresponding certificates were granted. Subsequently the classical course was dropped, then the scientific, and in 1902 the elementary course was supplanted by the regular Normal School course.

Since graduation from a State Normal school is preceded by study and practice in the Model school during a period of from six months to a year, the course of the Normal graduate virtually covers three years' teaching before he or she is entitled to a life certificate. Practical teachers who present the required evidence of three years' successful teaching can obtain what is called "the practical teachers' certificate," of equal grade with that of the regular graduate, by passing examinations before the faculty and State board. For several years there was dissatisfaction in certain circles because the college graduate was compelled to pass an examination in order to teach in the public schools. In 1893 a bill was introduced in the legislature to authorize the issue of permanent certificates to college graduates without examination, and after several amendments it was passed by both houses and became a law on May 10. It requires three years of successful teaching in the public schools as a condition to granting a certificate. If the applicant has taught three years before graduating from college, he can secure a certificate as soon as he receives from a recognized college any one of the five degrees A. B., B. S., Ph. B., A. M., M. S. This somewhat complex method of granting teachers' licenses works well in practice, because it is an outgrowth of the system and covers the needs of the schools as they become manifest in the prolonged efforts to increase their efficiency and usefulness.

Pennsylvania Educational Association.—The State Teachers' association was organized at Harrisburg, in December, 1852. At first two meetings were held each year, but since 1857 one meeting annually (with the exception of 1879) has been held. In 1900 the name was changed to Pennsylvania Educational Association, a new constitution was adopted, and provision was made for the organization of departments devoted to special topics like child-study, the kindergarten, and higher education.

The State Directors' Association and the Association of City and Borough Superintendents have been affiliated as departments of the educational association, although their sessions are held at a different time and place. The new constitution seems to have enlarged the scope of activity and interest, and the power for good of the various associations which have become part of the general organization.

Teachers' Institutes.—As a means of reaching the people and creating a healthful school sentiment the annual teachers' insti-

Simon Snyder

Member State Constitutional Convention 1790; member State Legislature 1797, and its speaker 1802-1808; governor 1808-1817; State senator 1817-1819

tutes have been a potent factor among the educational forces of the State. The system grew out of voluntary meetings of teachers held in Warren, Lawrence, and Indiana counties, and the movement soon extended to Lancaster, Crawford, Chester, Erie, Wayne and Susquehanna counties. A special law was passed for Chester, permitting aid from the county treasury. When Dr. Wickersham saw that township institutes had proved a failure in many sections, he adopted a plan for an annual institute, with aid from the county treasury, the sum to be not less than $60 nor more than $200, and to be determined within these limits by the actual attendance of teachers.

A general institute act was passed in 1867, and later another act authorized closing the schools during the week selected for the institute and required school boards to pay the teachers their regular salary (up to two dollars per diem) for each day of attendance, including half a day each for going from and returning to their homes. With the exception of Philadelphia, which works under a special law, all teachers attend the institute unless necessarily prevented. The law governing institutes has been modified so as to allow cities and boroughs with fifty teachers or more to hold separate institutes, whereby the superintendent is enabled to adapt the instruction to the particular needs of graded schools.

The School Term.—The act of 1836 contemplated six months' terms for the schools of the State, in case the funds of the districts were sufficient, but in most cases they were kept open only three months. In 1849 the minimum term was made four months, but in 1851 the law governing terms was abolished. The act of 1854 again fixed the term at four months, and in 1872 it was lengthened to five months. In 1881 the friends of still longer school terms started a movement at the State Teachers' Association to make the minimum six months, and their efforts were rewarded with success six years later in the passage of the act of 1887, although much opposition was required to be overcome in gaining the desired end.

The same year an effort was made to increase the general school appropriation from one million to one and one-half million dollars, but this measure also aroused determined opposition and required patient effort to secure its enactment into a law. The movement for a seven months' term, also, was started in the State Teachers' association. The committee on legislation prepared a bill which failed to pass during the session of 1897, but through the help of considerate friends of the schools, it became a law during the session of 1899.

Free Text-Books.—During the constitutional convention of 1874 there were long debates on the question of uniformity of text-books to be used in the public schools. It was suggested that the State superintendent be authorized to select the books, and it was also proposed to establish a board, consisting of the governor, attorney-general and the superintendent of public instruction, for the same purpose. A ten-year limit was favored by some and a five year limit was proposed by others. No result was reached, however, and the power of selection was allowed to remain in the hands of school directors. The act of 1854 made it the duty of the school directors immediately after the annual choice of teachers, and before the opening of the schools, to select school books after consultation with the teachers, and specified that those and no other should be used.

The lack of uniformity of text-books and the competition among publishing houses was the occasion of much annoyance and injury to the common school system. Frequently parents were obliged to purchase entirely new books after a removal from one township to another. The act of 1857 sought to remedy this difficulty by giving the directors power at a triennial convention to adopt text-books for an entire county. Even this law was so unsatisfactory that it was repealed at the end of two years, and in its stead an act was passed to prevent changes in books oftener than once in three years. A new act providing for free text-books was passed by the legislature in 1893, and was approved May 18.

It saved fully one-third of the annual cost for books throughout the State, and all difficulties arising from lack of uniformity were permanently settled. From that time the poor man's child could have the books and supplies without personal cost, and could not be deterred from entering the high school by reason of the expense involved in the purchase of the necessary books. Although the schools in the year ending June, 1901, were attended by 1,161,524 pupils, the expense for text-books and supplies during that year was only $1,194,584.86, an average of $1.03 per pupil.

Abner Lacock

Member both branches of the State Legislature; congressman 1811-1813; United States senator, 1813-1819

Compulsory Education.—At a meeting of the State Teachers' Association, held at Allentown in 1868, Dr. Burrowes called attention to the absence from school of many children of school age, and introduced a resolution asking for the distribution of the school appropriation upon the basis of actual attendance instead of the number of resident taxable citizens. Had this resolution then gone into effect, it would practically have made every taxpayer a truant officer, giving him a direct interest in securing the fullest possible attendance at school. A committee of three was appointed to make a report at the next meeting upon absenteeism of children from school, the evils resulting therefrom, and the frame of a bill to correct them. The committee reported at the Greensburg meeting that the education of 100,000 children in Pennsylvania was then wholly neglected; in Illinois 150,000; in Ohio 135,000; in New York 200,000. "Very judicious computations," says the report, "make the number of children in the United States not receiving even an elementary education to be two and one-half millions. Among the evils resulting from this absenteeism the report enumerates loss of intelligence, loss of productive power, loss of the comforts of life, loss of virtue, loss of citizenship, loss of respectability, loss of happiness, loss of soul enough to sadden the heart and hopes of the Christian world."

From the annual reports of State Superintendent Wickersham the committee deduced the following facts: "Three-fourths of the youth sent to houses of refuge have never been at school or attended so little as to be equivalent in results to no attendance. In our almshouses are six paupers without schooling to one having some education. There are forty persons with none or but an indifferent education to one having a good education. In our jails there are two persons illiterate to one having some education. In our penitentiaries there are thirty persons with either none or but a poor education to one having a liberal education. By estimating five and a half months as the average school year and $1.50 as the average cost per month, and 100,000 as the number of children not partaking of school advantages, there is expended to no advantage each year in Pennsylvania at least three-quarters of a million dollars."

When compulsory attendance at school was first proposed at educational gatherings in Pennsylvania there arose much opposition against the plan. It was argued that such legislation was un-American, and that optional attendance at schools was most befitting a free people. In like manner it was argued that compulsory attendance at school was an unwarranted interference with the rights of parents and employers, and that the State had no right to pass laws in restriction of the employment of children.

The compulsory law, enacted in 1891, was vetoed by Governor Pattison on the ground that it was defective in its provisions and might work most serious evil to the very cause it was intended to benefit. A similar bill was vetoed in 1893. Two years later, however, a more practical and comprehensive bill was passed by the legislature, and received executive approval under date of May 16, 1895.

In approving the act Governor Hastings said: "There appears to be throughout the Commonwealth a general desire for such a law. I have not received a single protest from any citizen against this bill, so far as I can recall. The unanimity with which it was passed by the legislature, as well as the large number of requests made upon me to sign it, clearly indicate the general desire on the part of the people for a compulsory education law. Under these conditions I am convinced that I should not obtrude any individual judgment which I may have on this question of public policy. This measure provides for compulsory education in perhaps the least objectionable form to those who oppose it on principle, and offends as little against the personal rights of the citizen as possible. I, therefore, approve the bill, but if by experience the expectations of the people are not realized, future legislation doubtless will meet their demands."

The act of 1895 made attendance at school obligatory upon all children between eight and thirteen years. It imposed a fine upon the parent or guardian not exceeding two dollars upon first conviction for unnecessary absence of child or ward, and a fine not exceeding five dollars for each subsequent conviction. It provided for an enumeration of children and the employment of attendance officers. It did not interfere with the right of parents or guardians to send children to other than the public schools. It gave directors full power to excuse pupils for non-attendance and imposed no penalty if the school board failed to enforce the law. But its provisions were not found stringent enough to bring all the children to school, therefore the law was amended at the next session of the legislature. The new act changed the duration of compulsory attendance from sixteen weeks to seventy per cent. of the time in which the schools are in session in a given district. The age limit of compulsory attendance was extended to include persons from thirteen to sixteen years who were not regularly engaged in any useful employment or service. It provided that fines collected should be paid into the county treasury for the use of the school district. The act also made provision for placing insubordinate children in special schools. It gave school boards the right to make an enumeration for the purpose of obtaining more accurate lists than were furnished by the assessors. The act of June 14, 1897, forbade the employment after January 1, 1898, of any minor under the age of sixteen years who could not read and write English, unless he should present a certificate of sixteen weeks' attendance during the preceding year at an evening or day school.

Arms, 1820

For the purpose of meeting contingencies not provided for in earlier legislation on compulsory education, and for the purpose of correcting defects in existing laws, the bill of 1901 was passed, repealing the former acts of 1895 and 1897. The provisions of the new act are more definite and more stringent than those of former acts, and especially so in providing for the disposition of truant and incorrigible children in special schools. It imposes penalties upon teachers, employers, parents, guardians, superintendents and secretaries of school boards for failure to comply with the law, and gives power to the State superintendent to withhold one-fourth of the State appropriation from any school district refusing or neglecting to enforce its provisions.

High Schools.—The act of 1836 gave the school controllers of Philadelphia authority to establish a Central High school. The school was organized in 1838 and was the first of its class in the United States outside of New England. Dr. Burrowes once prophesied that in due time high schools would be established at intervals of six miles throughout the State. This prediction has not been entirely fulfilled, yet high schools have been gradually established in all the leading cities and boroughs and in several of the larger townships. At first the courses of study were mapped out by the local authorities and were often shaped to suit the standard of scholarship of the teachers in charge. Sometimes the high school curriculum comprised little more than advanced work in the common branches and the education they offered was little calculated to fit the pupils for practical life or to prepare them for admission to college.

In 1895 the legislature passed an act classifying high schools and requiring that at least one teacher of advanced scholarship should be employed in every such institution receiving aid from the State. In 1901 fifty thousand dollars were set apart to aid in the establishment and maintenance of township high schools during the two ensuing years, and under this stimulus high schools are springing up in rural districts. Laws have also been passed to provide for the transportation of pupils and for the centralization of schools. On account of poor roads, irregular township lines and the lack of system in planting homes in early days, many difficulties have been encountered in the consolidation of schools, especially in mountainous districts, and it is still a question whether centralization will be as practicable and popular in Pennsylvania as in other States where the idea has been carried into effect and found advantageous.

Higher Education.—The freedom of thought and liberty of conscience for which William Penn provided in his colony opened the door for the entrance of men of science from the Old World. Hither Dr. Priestley fled for refuge, and Voltaire cast longing eyes when persecuted and exiled from home. On Pennsylvania soil was found in the person of Peter Miller, prior of the monastery at Ephrata, the scholar learned enough to translate, in response to the request of congress, the Declaration of Independence into seven European languages. In Pennsylvania Franklin made his wonderful discoveries, and Rittenhouse made his famous observations of the transit of Venus. In Penn's territory Bartram founded the first botanic garden in America. Here Muhlenberg, the botanist, did his work, and here, too, Wilson, Audubon and Nuttall found inspiration for their scientific pursuits. In Philadelphia lived Benjamin Rush, the surgeon-general of Washington's army and the founder of medical study in America. Largely through his efforts the University of Pennsylvania and the colleges at Carlisle and Lancaster were established. In Germantown Christopher Saur printed the Bible in German. Next to Eliot's Indian Bible, Saur's Bibles were the earliest printed in America. The printing of books was also carried on at Ephrata. Prior to the Revolution more books were printed in Pennsylvania than in all the other colonies combined. It was natural for men like Rush, Franklin and Dickinson, and for educated clergymen like the Muhlenbergs, to lay stress upon higher education. Henry Melchior Muhlenberg, the pioneer and organizer of the Lutheran church in America, sent his sons to the University of Halle to be educated. One of them, Frederic Augustus, became speaker of the first and the third House of Representatives under the federal constitution. Another, John Peter Gabriel, became major-general in the Revolutionary army, and a senator of the United States. His statue now stands in the rotunda of the capitol at Washington. A third son, Gotthilf Henry Ernst, did work in botany that never will be forgotten.

The expense of a journey to the seats of learning in the Old World, and the hardships connected with a sea voyage in those days, caused the need to be felt of an institution of learning nearer home. The academy out of which has grown the University of Pennsylvania was founded at Philadelphia before the middle of the eighteenth century. It was chartered as a college in 1755. During the Revolutionary war it passed through strife and storm. For a time two rival organizations struggled for its rights and property. In 1791 the struggle was ended by an amicable union, each organization contributing twelve members of its board to form a new one, which was then incorporated and vested with the rights and properties of both under the name of the "Trustees of the University of Pennsylvania." In 1800 the trustees bought the building which the State had erected for the president of the United States at a time when it was thought Philadelphia would be the permanent capital of the nation. An additional building was erected for the medical department in 1807. In 1829 these buildings were replaced by two separate but similar buildings, which were occupied until 1871. With the election of William Pepper an era of expansion was begun and the University was transferred to new quarters in West Philadelphia. The institution now counts its buildings by tens, its professors by hundreds, its students by thousands, and its endowment by millions. It maintains departments for the study of philosophy, law, medicine, dentistry and veterinary medicine, as well as departments for instruction in the arts and sciences. It offers courses in finance, music, architecture, and in mechanical, electrical, chemical and civil engineering. It also offers courses for teachers, and the chair of pedagogy is filled by Dr. M. G. Brumbaugh, late Commissioner of Education in Porto Rico.

Pennsylvania has two metropolitan centres of population, one at the confluence of the Schuylkill and the Delaware, and the other where the Monongahela and the Allegheny form the Ohio. The former points with just pride to five great schools of medicine, four schools of pharmacy, the Girard College for orphans (named after its founder, Stephen Girard, and now the wealthiest institution for orphans in the world), and the Drexel Institute, founded by Anthony Joseph Drexel and now one of the foremost schools of its kind in America. At the other centre a similar institute is to be founded through the munificence of Andrew Carnegie. Here, also, has grown up an institution known as the Western University of Pennsylvania, comprising departments of art, science, law, medicine, dentistry, and pharmacy. Its history dates back to the eighteenth century. After passing through fire and other misfortunes it has now the second largest attendance in the State. Under its auspices Professors Langley and Keeler made their celebrated discoveries in astronomy.

Three other institutions have a historic connection with schools founded in the eighteenth century. After the Revolutionary war had been brought to a close it was felt that the youth of an independent nation should be educated in an atmosphere of liberty, and to this feeling is ascribed in part the movement to establish the college at Carlisle. It was named in honor of John Dickinson, governor of Pennsylvania at the time, "in memory of the great and important services which he rendered to his country," and "in commemoration of his very liberal donation to the institution." The early history of the college was full of trials and vicissitudes, yet it has given the nation many distinguished men, including one president of the United States, five cabinet officers and fifty judges. In 1833 it passed under the control of the Methodist church. The patronage received from that denomination has made it one of the flourishing colleges in the Commonwealth. It maintains a school of law which dates from 1834, and which was re-established in 1890. It was one of the very first to inaugurate the privilege of electing laboratory work for the Greek of the junior year and for the Greek and Latin of the senior year.

John Andrew Shulze

Clergyman; elected to the Legislature, 1806; and again, 1821; State senator, 1822; governor, 1823-1829

To provide for the education of the people of German extraction a college was chartered by the general assembly on March 10, 1787, and named after Benjamin Franklin. Fifteen of its trustees were to be chosen from the Lutheran church, fifteen from the Reformed church, and fifteen from other Christian denominations. It did not develop into a regular college until its union with Marshall College in 1852.

Still another flourishing college of the present day may be said to have a historic connection with the eighteenth century. The early settlers of Washington county were firm believers in higher education. It is related of the wife of Rev. Joseph Smith that she gave up for school purposes the log cabin which had been added to the house as a kitchen, and with restricted facilities for cooking she undertook the task of boarding the students. In time the academies at Canonsburg and Washington were founded. They developed into rival colleges, but were consolidated as Washington and Jefferson in 1865. Including the alumni of the two when they were separate institutions, this college takes foremost rank in the number of students it has graduated from the regular four years' courses.

Previous to 1874 charters giving power to confer academic degrees were freely granted by the legislature to corporations under the various names of university, college, academy, seminary, high school and institute. More than one hundred and twenty schools were chartered in this way, but less than twenty-five have developed into regular colleges. The majority of them grew weak from excess of number, and the usefulness of each was more or less hindered by the want of money. In early days the State made gifts of land and small sums of money for the founding and maintenance of some of these schools, but the lack of available funds in the State treasury, due to extensive internal improvements, made liberal appropriations impossible, and it was not until after the close of the Civil war that adequate aid was given to any of the regular colleges in Pennsylvania.

In this connection the names of many donors deserve special mention. Ario Pardee gave Lafayette College various sums aggregating a quarter of a million dollars. It also received $150,000 from the Fayerweather estate, and the total value of the college property now exceeds one and one-half million dollars. Asa Packer, who in 1865 founded Lehigh University by a gift of a half million dollars, gave that institution the total sum of three million dollars. Joseph Wharton has given half a million to the University of Pennsylvania for its school of finance and political economy. Provost C. C. Harrison has given a like amount to the graduate department, as well as other large donations for equipment and support. William Thaw gave $100,000 toward the permanent endowment of Western University. Richard T. Jones made Haverford College residuary legatee to his entire estate, by means of which its endowment fund and other property has increased in value to $2,000,000. Dr. Joseph Wright Taylor

"Hazel Dell," Bayard Taylor's boyhood home

Near Kennett Square. Engraved for this work from negative by D. E. Brinton founded Bryn Mawr College by his magnificent donations, and John D. Rockefeller has since given the same institution a quarter of a million dollars. William Bucknell, after whom the university at Lewisburg is named, gave $165,000 for its endowment, $20,000 for scholarships, and provided additional funds for the erection and equipment of an astronomical observatory, chemical laboratory, chapel, cottage for young men, cottage for young women, and the endowment of prizes in the Ladies' institute. A. J. Drexel gave more than four millions to found and endow the institute of art, science and industry named after him. A. Louis Thiel, after whom the college at Greenville is named, gave more than seventy-five thousand dollars to that institution. Andrew Carnegie has offered the State College $100,000 for a library, and Mr. and Mrs. Charles M. Schwab have given a similar amount for a chapel. At the recent centennial of Washington and Jefferson College President Moffat announced gifts aggregating over $400,000. Of this amount J. H. Wallace of New York gave $111,000, J. V. Thompson of Uniontown $100,000, and William R. Thompson of Pittsburg $50,000.

A long list of names would not exhaust the roster of donors who have given sums ranging from ten thousand to one hundred thousand dollars for the benefit of institutions of higher education.

Under the constitution of 1874, gifts by the State are impossible except to undenominational colleges. The zeal of religious societies or denominations has been the hope of all the colleges which emphasized the regular classical course. The Presbyterian church builds colleges instead of cathedrals, and now supports two large and flourishing colleges, Lafayette, at Easton, and Washington and Jefferson College, in the western part of the State. Westminster, Geneva and Waynesburg Colleges were founded by and derive their support from various organizations of Presbyterians. The adherents of this denomination were also quite active in the founding of Dickinson College at Carlisle, and of

Allegheny College at Meadville, which were at first undenominational but subsequently passed under the control of the Methodist church. Lincoln University (for colored students), at Oxford, is also largely supported by Presbyterians. The Lutheran church supports colleges at Gettysburg, Allentown, Greenville and Selinsgrove.

Of the institutions chartered under the auspices of the Reformed church only two have been maintained as regular colleges, Franklin and Marshall at Lancaster, and Ursinus at Collegeville.

The United Brethren have built up a college at Annville, and the United Evangelical church has consolidated its two colleges into one institution, which is not yet permanently located, but occupies temporary quarters at Myerstown.

The two branches of the Society of Friends (Orthodox and Hicksite) support the flourishing colleges at Haverford, Swarthmore and Bryn Mawr. The last is for women and maintains high standards of admission and graduation.

The German Baptists have developed a regular college at Huntingdon, known as Juniata College. The largest and best known Baptist institution in the State is Bucknell University, at Lewisburg.

Grove City College owes its existence largely to the perseverance of President I. C. Ketler, Ph. D.

The Catholic church aims to build both colleges and cathedrals. Her colleges at Villanova and Beatty, as well as others, are taking prominent rank in scholarship and efficiency.

Of the colleges for women, Bryn Mawr ranks with the best in the land. The Pennsylvania College for Women at Pittsburg, Wilson College at Chambersburg, Irving College at Mechanicsburg, and the Allentown College for Women, are steadily growing in strength and efficiency and by their work have demonstrated the usefulness and value of institutions of their special class.

The movement for co-education has made its way into all but six of the protestant colleges of the State which originally were established for young men. Some of the colleges were founded to prepare young men for study in the theological seminaries. Of the latter thirteen are now maintained in the State.

To give a detailed history of the colleges and professional schools would fill many volumes. Brief histories to the close of the nineteenth century are given in the third biennial report on higher education, published under the direction of the College and University Council, and in the series of monographs issued by the United States Bureau of Education.

The State College.—The legislature has made appropriations at various times to aid colleges and academies, but not in large amounts except to hospitals attached to schools of medicine. Another exception is to be noted in the maintenance of the State College, originally chartered as the Farmers' High School of Pennsylvania. It struggled under various administrations until Dr. George W. Atherton became president. Largely through his efforts the federal Congress passed acts securing to the land-grant colleges fixed revenues, and pledging the States accepting the same to erect the necessary buildings. As a consequence the legislature has been more liberal; the college has grown remarkably in equipment, buildings, in the number of students and professors, and now takes rank with the best schools of agriculture and technology.

Degrees.—The practice of granting charters, with power to grant degrees, to persons making application multiplied the colleges until they became weak from excess of number. After provision had been made for the recognition of college degrees by the issue of teachers' permanent certificates to graduates who had taught three years, there was a temptation for every little school to apply for the power to confer academic degrees. A number of small schools issued advertisements to attract students, and one of them offered to confer the degree of A. B. on a basis below the entrance requirements of reputable colleges. On the authority of a decision of the Supreme court handed down in 1838, the attorney-general informed the superintendent of public instruction that he was not required to grant without examination permanent certificates under the act of 1893, except to graduates of colleges legally empowered to confer degrees, and that the general incorporation of a literary institution under the act of 1874 did not legally invest it with that right. At the next session of the legislature a college and university council was created to check the indiscriminate chartering of schools with power to confer degrees, by establishing a minimum in property and faculty as a condition of the granting of such powers. Under the operation of the council, whose work has been mainly of a negative character, the colleges have been growing in strength and attendance, as well as in the standards of admission and graduation, which are now enforced.

John Brown Tannery

New Richmond, Crawford County; built 1826; still standing

The standards of the colleges of medicine, dentistry, pharmacy and veterinary medicine have been raised and the courses of study have been lengthened through the creation of State examining boards, who are empowered to examine graduates and grant licenses to practice the professions for which the above named institutions are established.

The Outlook.—In view of the struggles and triumphs of the past, the present outlook is encouraging. With an organized system of public schools in every township, with well paid and efficient officers to supervise the schools, with thirteen Normal schools, and several training schools for the preparation of teachers, with mining, factory and compulsory attendance laws to secure to every child its right to grow and to know, with a high school system forming a connecting link between the common school and the college, with free text-books and supplies for all pupils in all grades of the public schools, with special schools for orphans, for the blind, the deaf, and for the feeble-minded, with well-endowed technical schools and other institutions of higher learning, with a thirteen-mill limit of taxation for maintenance and a like maximum for building purposes, with a minimum term of seven months, and with the way open for free libraries and centralized schools in our townships, as well as in our cities, the schools, colleges and universities in Pennsylvania can be made to furnish all the education that students are willing to receive. As in the past, the future efficiency of the system will depend upon the will of the people. The schools can never be made better than the people want them to be, nor can they long remain below the demands of public opinion. The appeal to public opinion is the final resort of the educational reformer and the advocate of good schools. As soon as parents realize that the best in education is not too good for their children, they will demand and receive the best, and no person will assume to use the school as a means of promoting personal profit or personal ambition. This goal looms up in the distance as the haven towards which the public school system is steadily moving.

CHAPTER II.

THE JUDICIAL SYSTEM

THE statement is frequently made that the judicial system of Pennsylvania is largely derived from the common law of England. In many respects this is true, but a close study of the history of the laws and judicial practice of this Commonwealth will reveal the fact that they are in great measure an original growth and differ materially with the older system of England. The latter prevailed to a great extent under the proprietary government from the time of Penn's accession to the adoption of the first constitution in 1776, when it was slightly modified. The constitutions of 1790 and 1838 enlarged and more clearly defined the powers of the courts, but in 1850 an amendment to the judiciary article of the constitution of 1838 deprived the governor of the appointing power, and thenceforth all the judges, even of the court of last resort, were elected by the people. With this radical departure was swept away the last connecting link between the purely political and the judicial powers of the Commonwealth, and the latter was thereupon established as a coordinate department of State government.

In the early history of the colony the Governor was in effect the maker and enforcer of the laws, and the execution of the English and colonial statutes rested with him, as did the exercise of the royal authority in the province. But Penn appears not to have made immediate use of the power vested in him under his charter, and even recognized and for a short time continued in force the Duke of York's laws which prevailed at the time of his accession. Under the charter the governor, or his deputy, was empowered to make and execute the laws, establish courts of justice and appoint judges, grant pardons and reprieves, issue process, and try and determine all causes of whatever nature, subject only to the superior authority of the crown. Penn's love of peace impelled him to oppose all proceedings that savored of litigation among the colonists, and he is said to have appointed "peacemakers" who acted as arbitrators and possessed some of the powers of judges. For those who would practice as attorneys he had little regard and opposed their aspirations with discouraging restrictions in prohibiting the right to exact fees (retainers) from clients, and he also restricted the issue of process until the persuasions of the peacemakers had been tried and exhausted. Nevertheless, the Provincial Council was clothed with judicial powers and was presided over by Penn himself, or his deputy.

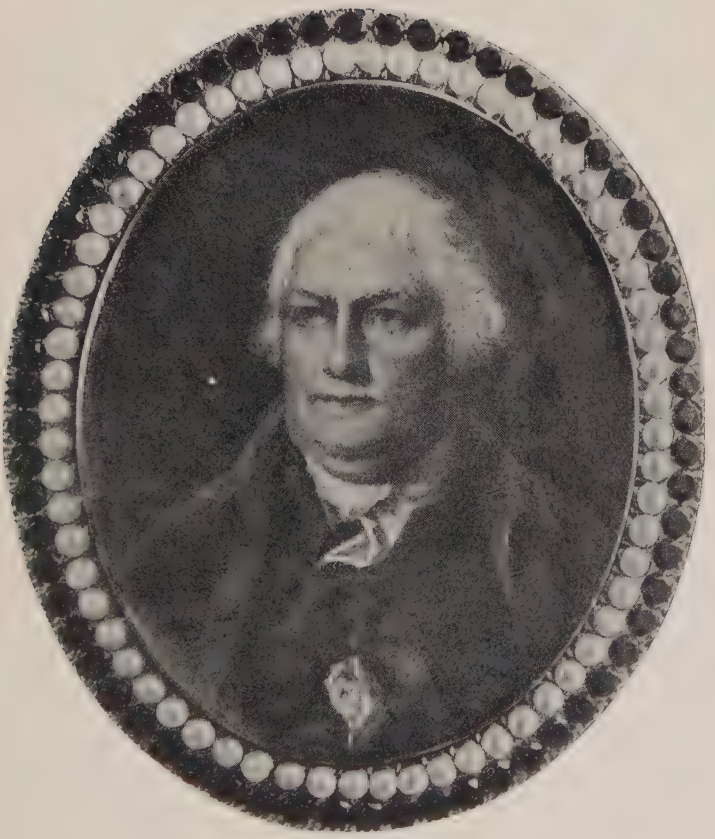
The first exercise of judicial authority over any part of the territory now comprising this State was that established in 1642 by John Printz, the Swedish governor at New Gottenberg (Tinicum), who gave direction to his judges to administer law and decide all controversies and disputes in accordance with the laws and customs of Sweden. The seat of justice was removed to Upland (now Chester) about 1662. Upon the Dutch succession in 1655 and the English in 1664, the magistrates were continued in office, some of them holding until Penn's accession.

The Duke of York's Laws, or "The Duke's Laws," as more commonly known, were framed for the government of the colony of New York soon after the grant (1664) from Charles II. to his brother James, the Duke of York, and were molded after the laws then in force in England. So far at least as related to the affairs of government in Pennsylvania, the courts established under the Duke's laws, with a single exception, had little influence in the organization of the judicial system of the Commonwealth in later years. The exception referred to was the County courts, organized in 1673, one of which was provided to be established in each county, with power to hear and determine all issues when the amount involved was under twenty pounds, without appeal, and to have "exclusive jurisdiction in the administration of criminal justice, with appeal in cases extending to life, limb and banishment to the Court of Assizes in New York." This court was continued by Penn and was the popular tribunal of the province until the formal reorganization of the judicial system under the act of May 22, 1722.

Sessions of the County court were held by justices of the peace appointed by the governor, with jurisdiction at times limited to the county within which they lived, and in other cases extending throughout the province, but in all cases these appointments were made to suit the convenience of the executive. Attendance by the justices was compulsory, under penalty of punishment by fine. In the performance of their duties the justices were frequently assisted by the governor or his councillors and the judges of the Provincial court, all of whom were justices of the peace by virtue of their higher official station.

In 1683 the civil jurisdiction of County courts was first defined, but afterward the powers of its justices were enlarged, and they were frequently called upon to perform duties which were not consistent with the dignity of their office, all of which gave rise to expressions of dissatisfaction. In 1684 each Quarter Sessions of the County court was made a court of equity in addition to its former duties. The law establishing this court was re-enacted in 1694, but the exact nature and scope of the powers thus conferred never have been fully understood.

The County court also had its criminal side and its justices were empowered to try all offenses except "heinous or enormous crimes." Occasionally the justices were clothed with jail delivery powers, but generally the jurisdiction of the court in the disposition of criminal business was limited to offenses of minor



Jasper Yeates

Member of the convention which ratified the Constitution of the United States; associate justice of the State Supreme Court 1791-1817. Photographed especially for this work from original miniature

character. Appeals from the County court lay to the Provincial Council previous to the establishment of the Provincial court, in 1684.

Under its original name and general powers the County court was continued until 1722, when its civil and criminal branches were separated. The act of May 22 of that year, entitled "An Act for the establishment of Courts of Judicature in this Province," provided for a court styled the "General Quarter Sessions of the Peace and Gaol Delivery, to be holden and kept four times in every year in each county," by a competent number of justices of the peace, appointed and commissioned by the governor or his deputy. The same act also provided for the appointment of a competent number of persons to hold the Common Pleas. At first the same persons were commissioned to hold the terms of both courts, but in 1759 (Sept. 9) an act was passed prohibiting the justices of the Quarter Sessions from sitting as judges of the Common Pleas, and provision was made for the appointment of five persons "of the best discretion, capacity, judgment and integrity" to be commissioned for holding the Common Pleas. The justices of the Quarter Sessions and judges of the Common Pleas were appointed for life or during good behavior. Under the first constitution the term was limited to seven years, but under the second constitution the law of life appointments was again restored.

The constitutions of 1776 and 1790 made few changes in the character and composition of the Common Pleas[1] and Quarter Sessions courts, other than to clothe their justices and judges with certain chancery and equity powers. The life tenure of office was continued until the adoption of the constitution of 1838, when the term was limited to ten years, if the incumbent, then required to be learned in the law, should so long behave himself well. Since 1850, in pursuance of an amendment to the judiciary article of the constitution of 1838, judges of the Common Pleas and Quarter Sessions, as well as of all other courts in this State, have been elected by the people.

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[1] For more rapid disposition of civil court business in the city of Philadelphia the legislature in 1811 (March 30), passed an act to establish the "District Court of the City and County of Philadelphia;" such court to consist of a president and two assistant judges, with authority to hear and determine all civil pleas and actions, when the amount involved in controversy exceeded the sum of one hundred dollars. The court at first was experimental and was authorized to continue six years, but it proved of such great value in quickly disposing of civil causes that it was in fact continued until 1874, when the reorganization of the Common Pleas made ample provision for courts in the city and county without further need of the District Court.

Under the present constitution, which went into effect January 1, 1874, courts of Common Pleas and General Quarter Sessions of the Peace are maintained in each county. The judges of these courts, required to be learned in the law, are elected for terms of ten years each, receive fixed compensation, and are removable by the governor on the address of two-thirds of each house of the legislature. It is provided that the State shall be divided into judicial districts for the convenient transaction of business in these courts, with special provision for the counties of Philadelphia and Alleghany. At the present time the number of districts is fifty-six. When any county shall contain forty thousand or more inhabitants it shall constitute a separate judicial district, and shall elect one judge learned in the law. Counties of less than forty thousand inhabitants may be formed into convenient single districts, or may be annexed to contiguous districts. The office of associate judge, not learned in the law, is abolished in all counties forming separate judicial districts. Previous to 1895 appeals from the Common Pleas and Quarter Sessions courts were taken to and reviewed in the Supreme court, but since that time, except in case of felonious homicide, appeals lay to the Superior court. The legislature has provided how and when appeals may be taken, and also has from time to time defined the powers and duties of the courts. Judges of the Common Pleas, learned in the law, are also judges of Oyer and Terminer, Quarter Sessions of the Peace and General Jail Delivery, and of the Orphans' courts in counties of less than one hundred and fifty thousand inhabitants. Within their respective districts they are justices of the peace in criminal matters.

From the early times of the colony under one name or another the Common Pleas and Quarter Sessions courts have been the popular tribunals of the Commonwealth for the attainment of rights, the redress of grievances and the punishment of offenses against the law. Each still retains something of its original character, and in the writs, trials and judgments there is still preserved that which suggests the spirit and custom of the colonial period, and also the basic principle of these courts—the Common Pleas, Assizes, Exchequer and Queen's Bench of England.

Walter H. Lowrie

Author; judge District Court, Alleghany County, 1846-1851; associate justice State Supreme Court, 1851-1857; chief justice, 1857-1863. From a photograph in possession of the Western University of Pennsylvania

Orphans' courts, one of which exists in each county in the State, for two hundred years and more have been closely allied to the Common Pleas, although in the deprivation of their powers and in their practice and purposes they are entirely distinct. An Orphans' court was established in the colony by act of the assembly passed in 1683, and was provided to be held by the justices of the County court in each of the counties in the Province, conducting its business after the methods which then prevailed in the Court of Orphans' Masters in England.

The especial province of the Orphans' court was the inspection and care of the persons and property of orphans, the administration and control of the estates of deceased persons and the guardianship of minors. Under the several constitutions and numerous legislative enactments the powers and jurisdiction of the court have been enlarged, and it is a court of record, having a seal. It was maintained without material change until 1713, when it was reorganized and its terms were authorized to be held by the justices of the Quarter Sessions; but under the amendatory act of 1759 the judges of the Common Pleas were made judges of the Orphans' court. This law still prevails, except in counties of more than one hundred and fifty thousand inhabitants, where there are separate Orphans' courts, presided over by specially elected judges, learned in the law. Such courts are vested with the powers and jurisdiction of Register's courts, the latter being abolished in counties having Orphans' courts.

In name and in fact the Orphans' court has maintained an unbroken existence from the early colonial period. Its identity never at any time has been lost, and it has survived the sweeping changes of four State constitutions besides numerous legislative enactments; and to-day it is the most convenient and expeditious medium known to the law for the accomplishment of the special purposes for which it was established.

A Provincial court, comprising five specially commissioned judges, was established in the colony in 1684, and was designed to relieve the council of a part of its former judicial duties. The Provincial Council, from which this court was descended, was one of the earliest tribunals in the colony and was called upon to perform various duties. Its members were chosen from among the most influential and wealthy men of the province, whose assistance was sought by the governor or his deputy in the administration of civil affairs. In fact, the council was the advisory body in the colony, a part of the legislative and executive as well as judicial power, and the "great conservator of the public peace and dignity." Prior to the establishment of the Provincial court, the council heard appeals from the county

Robert Cooper Grier

Appointed judge District Court of Alleghany County in 1838; associate justice Supreme Court of the United States, 1846-1870. Reproduced for this work from an engraving in possession of Mrs. William M. Darlington courts, and previous to 1685 it constituted the court before which might be brought to trial persons charged with the grave crimes of witchcraft, enchantments, sorcery and the practice of "magick arts."[1] The council also held jurisdiction in Admiralty cases until the establishment of a Vice-Admiralty court. It was in all respects a "High Court of Errors and Appeals," with the governor or his deputy as chief judge, and the councillors, who were *ex-officio* justices of the peace, in the capacity of associate justices. The duties of the Provincial Council as a judicial body were terminated with the new charter of 1701.

The Provincial court as originally established was clothed with authority to review and determine appeals relating to "titles to land and all causes, civil and criminal, both in law and equity, not determined by the respective county courts." It sat twice in each year in Philadelphia, and at least two of the justices were required to sit in every other county in the spring and fall. The court was re-established in 1685, and its judges were reduced to three in number. It was reorganized in 1690 and again in 1693, when the number of judges was increased to five. One of the judges always was commissioned as chief justice. Appeals from the judgments of this court lay to the Privy Council of England. During the period of its early history the dignity and character of the Provincial court were sustained with difficulty. Its members were chosen for terms of not more than three years; the duties were arduous, necessitating all the inconveniences incident to travel through unsettled localities and indifferent entertainment at places where terms of court were required to be held; and, above all, the compensation was inadequate to service rendered. As a consequence the records were poorly kept, and many of the proceedings are not preserved.

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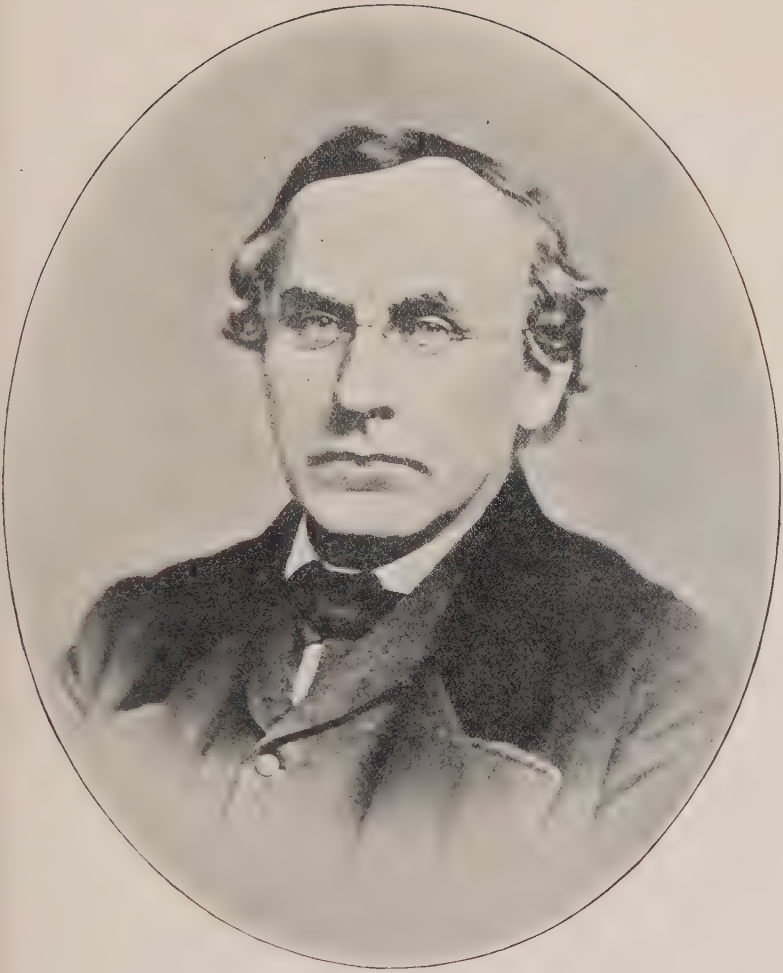
[1] In this connection it is interesting to note that under the act of May 31, 1718, the following offenses were made punishable with death: Treason, mis-prision of treason, murder, manslaughter, sodomy, rape, robbery, mayhem, arson, burglary, witchcraft, and concealment of birth of an illegitimate child.



George Sharswood

Member State Legislature 1837-1838 and 1842-1843; judge District Court 1845; president District Court 1848-1867; justice Supreme Court of Pennsylvania 1867; and chief justice 1878-1882; author several standard legal publications

However, the court was maintained as a part of the judicial system until the reorganization act of 1722, when it passed out of existence and was replaced with the Supreme court.

The Supreme court of Pennsylvania, the ultimate tribunal of the State, is the direct outgrowth of the Provincial court and had its inception in the still older Provincial Council. On May 22, 1722, the colonial assembly passed an act for establishing courts of judicature, wherein it was provided, among other things, that "there shall be holden and kept at Philadelphia," etc., a court of record styled "The Supreme Court of Pennsylvania," comprising three persons "of known integrity and ability," commissioned by the governor to be judges of said court, with full power and authority to issue writs of habeas corpus, certiorari and writs of error; to hear appeals from inferior courts properly brought before it for review, and in fact to have and possess original and appellate jurisdiction with full and broad powers consonant with the dignity of the highest court, subject to review only by the crown. Subsequently the number of judges was increased to four, and as judges of the Oyer and Terminer, in addition to former powers, they were required to visit the several counties twice in each year for the trial of capital felonies. Appointments to the bench of this court were made by the governor, and were for life or during good behavior.

Under the first constitution, owing to the weightier matters which engaged the public and legislative attention, it was declared that the courts of justice should be established "as heretofore," and also that the judges of the Supreme Court of Judicature should be commissioned for seven years only, although capable of reappointment, and removable for misbehavior on the address of the general assembly. Under the second constitution appointees to the Supreme bench held office during good behavior, but were removable for cause on the address of two-thirds of each house of the legislature. The act of 1836 defined in detail the powers and duties of the court, and authorized its judges when sitting in banc to devise and establish by rule new writs and forms of proceeding for use in its own sessions and also in the Common Pleas and Orphans' courts.

The constitution of 1838, as far as it related to the Supreme court, made the term of office of its judges fifteen years, "if they shall so long behave themselves well," but in 1850 an important amendment to the judiciary article of the constitution took away the appointing power, previously vested in the executive, and provided for the election of its judges by the qualified electors of the State. With this radical change there disappeared the last remaining relic of the colonial period.

Under the present constitution[1] of the Commonwealth the Supreme court consists of seven judges, elected in the State at large, who hold their offices for the term of twenty-one years, if they so long behave themselves well, but are not eligible to re-election. It is provided that the judge whose commission shall first expire shall be the chief justice and preside over the sessions of the court. The jurisdiction of the court extends throughout the State, and the judges are *ex officio* justices of Oyer and Terminer and General Jail Delivery in the several counties, and in addition thereto, under the constitution and the statutes are given original jurisdiction in special cases. They are exempt by law from any other than judicial duties, and no court of original jurisdiction to be presided over by any one or more of their number shall be established. For the convenient transaction of business the territory of the State is divided into districts, known respectively as the Eastern, Middle, and Western districts, and regular routine sittings of the court are held in each. The tendency in later years is to establish and maintain the Supreme court as a court of final review only, to hear and determine appeals when properly brought before it, although its powers and

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[1] The constitution was ratified by the people in November, 1873, and went into effect on January 1, 1874.

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jurisdiction as defined by the constitution of 1874 are in no respect abridged.

For several years previous to 1895 the business of the court was far in arrears, and cases for argument and final determination were overcrowding the calendars and taxing the endurance qualities of the judges to the last degree. It was found, too, that many appeals were taken from the judgments of inferior courts which might better be received elsewhere than in the court of ultimate resort; hence, in remedy, the legislature in 1895 established the Superior court and set certain limitations on the right of appeal to the Supreme court. The relations of these courts are known to the legal profession, hence a detailed narrative of the rules regulating their practice in appeals is not necessary in this chapter.

The Superior court was established by act of the legislature passed June 24, 1895, and consists of five judges, learned in the law, elected by the qualified electors of the State for terms of ten years each. The especial province of the court is to hear and determine appeals (except in cases of felonious homicide) from inferior courts, and it has no original jurisdiction, except in habeas corpus proceedings. Its practice is governed by substantially the same rules which obtain in the Supreme court, to which it is next inferior in rank in the State.

Admiralty powers and jurisdiction were assumed by the governor and his council under the broad terms of the royal charter, and were so exercised until 1693, when the judges of that court were first appointed by the Commissioners of Admiralty in England. The court was continued throughout the colonial period, but through lack of frequent opportunity to exercise its special function it proved an unimportant factor in the judicial history of the province. In 1789 under the United States constitution Admiralty jurisdiction was vested in the Federal courts.

Justices' courts were established by the governor under the charter, and have been maintained in every township in the State from Penn's time to the present. The councillors were clothed with powers of justices of the peace, and as such sat in review of the proceedings of courts of inferior jurisdiction; and the judges of the old County courts held commissions as justices. Under the present constitution justices are elected in wards, districts, boroughs and townships in such manner as the law prescribes, and hold under commission from the governor for the term of five years. The office, however, is abolished in certain municipalities.

Penn Treaty Monument

Philadelphia. The south side of the shaft has the following inscription: "Placed by the Penn Society A. D. 1827, to mark the site of the Great Elm Tree." Engraved for this work from a negative by D. E. Brinton

The office of justice of the peace is descended from the English office of the same name, although under the constitution it is far less important, and in this State is purely the creature of the statute. Under the colony justices were persons of influence and substance, and the "Squire" always was regarded as one of the dignitaries of the township, whose word was law and whose example was worthy of emulation. Now the office is of little consequence in the administration of law, and having lost much old-time importance has also sacrificed its former dignity.

A Court of Chancery was established in Pennsylvania in 1720 in pursuance of an act of the provincial assembly, and was continued until 1735, when it was abolished.

Equity is and always has been a part and parcel of the law of this Commonwealth, whether under the colonial charter or the State constitution. It was a part of Penn's plan of government, and directly or by indirect implication has found its way into almost every law on the statute books from the time of the founder to the present constitution. In 1684 the Provincial court was granted powers as a court of equity, and in 1690 County courts were authorized to "hear and determine all matters and causes in equity" where the amount involved was ten pounds or more. In the act for the establishment of courts of judicature in the province passed in 1701, the judges of the County court were specially clothed with equity powers, and the same act also vested equity jurisdiction in the Provincial court, although in 1703 that power was set aside by the special order of the Queen's council. In 1710 another act establishing courts of judicature conferred equity powers on the County court judges, but this too was annulled in England in 1713.

Soon after this another attempt was made to vest special law and equity powers in the Provincial court, to be exercised in accordance with the chancery forms of England, but even this proved fruitless and the authority was annulled in 1719. In 1720 Governor Keith established a separate court of equity, of which he was chancellor and his councillors were assistants. This court appears to have received the royal sanction, or at least was not annulled, and it maintained a nominal existence until 1736, when it was abolished by the assembly, the latter action having been instigated by clamorous opposition to the court on the part of the people. After these discouraging and fruitless efforts no further direct attempts were made in the same direction, although subsequent legislative enactments and constitutional declarations conferred chancery powers on the Supreme, Common Pleas and Orphans' courts in the combined administration of law and impartial justice. General powers in law and equity were given the courts by the act of 1722 and the constitution of 1790, and were broadened by the act of 1836, while subsequent legislative enactments and constitutional provisions have not in any sense lessened them.

This brief survey of the courts of the State, which omits only those that are purely local in character, will furnish something of an idea of the machinery provided for the use of the bench and the bar of Pennsylvania from the days of the colony to the beginning of the twentieth century.

The succession of chief and associate justices of the Supreme court, with date of commission, is as follows:

CHIEF JUSTICES

Dr. Nicholas Moore, 4th 6th mo., 1684
James Harrison (decl.), 14th 7th mo., 1685
Arthur Cook, 31st 1st mo., 1686
John Simcock, 21st 9th mo., 1690
Andrew Robeson, May 29, 1693
John Guest, 20th 6th mo., 1701
William Clarke, 1703
John Guest, 1705
Roger Mompesson, Apr. 17, 1706
Joseph Growdon, Nov. 20, 1707
David Lloyd, Feb. 15, 1717
Isaac Norris (decl.), Apr. 3, 1731
James Logan, Aug. 20, 1731
Jeremiah Langhorne, Aug. 13, 1739
John Kinsley (d. May 11, 1750), Apr. 5, 1743
William Allen, Sept. 20, 1750
Benjamin Chew, Apr. 9, 1774
Joseph Reed (decl.), Mar. 20, 1777
Thomas McKean, July 28, 1777; July 29, 1784; Jan. 31, 1791
Edward Shippen, Dec. 18, 1799
William Tilghman,, Mar. 1, 1806
John Bannister Gibson, May 18, 1827; Nov. 19, 1838; Nov. 17, 1851
Jeremiah S. Black, Nov. 17, 1851
Ellis Lewis, Dec. 1, 1854; Jan. 5, 1855
Walter H. Lowrie, Dec. 7, 1857
George W. Woodward, Dec. 7, 1863
James Thompson, Nov. 25, 1867
John Meredith Read, Nov. 29, 1872
Daniel Agnew, Nov. 25, 1873
George Sharswood, Dec. 4, 1878

Ulysses Mercur, Dec. 26, 1882
Isaac G. Gordon, July 14, 1887
Edward M. Paxson (resigned Feb. 21, 1893), Dec. 18, 1883
James P. Sterrett, Feb. 21, 1893
Henry Green (d. Aug. 16, 1900), Dec. 6, 1899
J. Brewster McCollum, Aug. 17, 1900

ASSOCIATE JUSTICES

William Welsh, 4th 6th mo., 1684
William Wood, 4th 6th mo., 1684
Robert Turner, 4th 6th mo., 1684
John Eckley, 4th 6th mo., 1684
William Clarke, 10th 7th mo., 1684
James Claypoole, 14th 7th mo., 1685
Arthur Cook, 14th 7th mo., 1685
John Cann, 31st 1st mo., 1686
John Simcock, 20th 1st mo., 1686
James Harrison, 20th 1st mo., 1686
Joseph Growdon, 2d 2d mo., 1690
Peter Alricks, 7th 5th mo., 1690
Thomas Wynne, 7th 5th mo., 1690
Griffith Jones, 21st 9th mo., 1690
Edward Blake, 21st 9th mo., 1690
William Salway, May 20, 1693
Anthony Morris, Aug. 10, 1694
Cornelius Empston, about 1698
Edward Shippen, about 1690
William Biles, about 1699
Robert French, 20th 6th mo., 1701
Caleb Pusey, 20th 6th mo., 1701
Thomas Masters, 20th 6th mo., 1701
Samuel Finney, 1702
John Guest, Apr. 10, 1704
Jasper Yeates, Apr. 10, 1704
William Trent, Apr. 10, 1704
Richard Hill, Mar. 16, 1711
Jonathan Dickinson, Mar. 16, 1711
George Roche, June 10, 1715
Robert Assheton, June 12, 1716
Jeremiah Langhorne, Sept. 20, 1716
Dr. Thomas Graeme, Apr. 9, 1731
Thomas Griffiths, Aug. 13, 1739
William Till, Apr. 5, 1743
Lawrence Growden, Sept. 20, 1750
Caleb Cowpland, Sept. 20, 1750
William Coleman, Apr. 8, 1758
Alexander Steadman, Mar. 21, 1764
John Lawrence, Sept. 14, 1767
Thomas Willing, Sept. 14, 1767
John Morton, Apr. 20, 1774
William Aug. Atlee, Apr. 2, 1777; Aug. 16, 1777; Aug. 9, 1784
John Evans, Aug. 16, 1777
George Bryan, Apr. 4, 1780
Jacob Rush, Feb. 26, 1784
Edward Shippen, Jan. 31, 1791
Jasper Yeates, Mar. 21, 1791
William Bradford, Jr., Aug. 20, 1791
Thomas Smith, Jan. 31, 1794
Hugh Henry Brackenridge (d. June 25, 1816), Dec. 18, 1800
John Bannister Gibson, June 27, 1816
Thomas Duncan, Mar. 14, 1817
Moulton C. Rodgers, Apr. 15, 1826; Jan. 1, 1842; Jan. 25, 1842
Charles Huston, Apr. 17, 1826
Horace Binney (decl.), May 18, 1827
John Tod (d. Feb. 23, 1830), May 25, 1827
Frederick Smith, Jan. 31, 1828
John Ross, Apr. 9, 1830
John Kennedy, Nov. 23, 1830
Thomas Sargeant, Feb. 3, 1834
Thos. Burnside, Jan. 2, 1845
Richard Coulter, Sept. 17, 1846
Thomas S. Bell, Nov. 10, 1846
George Chambers, Apr. 10, 1851
Ellis Lewis, Nov. 17, 1851
Walter H. Lowrie, Nov. 17, 1851
Richard Coulter, Nov. 17, 1851
Geo. W. Woodward, May 8, 1852
John C. Knox, May 23, 1853
Jeremiah S. Black, Nov. 13, 1854

James Armstrong, Apr. 6, 1857
James Thompson, Nov. 6, 1857
William Strong, Nov. 6, 1857
William A. Porter, Jan. 20, 1858
Gaylord Church, Oct. 22, 1858
John M. Reed, Nov. 12, 1858
Daniel Agnew, Nov. 5, 1863
George Sharswood, Nov. 6, 1867
Henry W. Williams (vice Strong, resd.), Oct. 1, 1868; Dec. 5, 1868; Nov. 19, 1869
Ulysses Mercur (d. June 6, '87), Nov. 8, 1872
Isaac G. Gordon, Nov. 5, 1873
Edward M. Paxson, Dec. 3, 1874
Warren J. Woodward, Dec. 3, 1874
James Sterrett, Feb. 26, 1877
John Trunkey (d. June 24, '88), Dec. 6, 1877
James P. Sterrett, Dec. 6, 1878
Henry Green (vice Woodward), Sept. 29, 1879; Dec. 2, 1880
Silas M. Clark (d. Nov. 20, '91), Dec. 21, 1882
Henry W. Williams (vice Mercur), Aug. 19, 1887; Dec. 22, 1887; d. Jan. 5, 1899
Alfred Hand (vice Trunkey), July 31, 1888
J. Brewster McCullom, Dec. 18, 1888
James T. Mitchell, Dec. 18, 1888
Christopher Hydrick, Nov. 28, 1891
John Dean, Dec. 19, 1892
Samuel G. Thompson, Mar. 3, 1893
D. Newlin Fell, Dec. 12, 1893
J. Hay Brown (vice Williams), Sept. 25, 1899; Dec. 22, 1899
S. Leslie Mestrezat, Dec. 22, 1899
William P. Potter, Sept. 25, 1900; Dec. 3, 1901

JUDGES SUPERIOR COURT

Charles E. Rice, president judge, June 28, 1895; Dec. 19, 1895
James A. Beaver, June 28, 1895; Dec. 19, 1895
Howard J. Reeder (d. Dec. 28, 1898), June 28, 1895; Dec. 19, 1895
George B. Orlady, June 28, 1895; Dec. 19, 1895
John J. Wickham (d. June 18, 1898), June 28, 1895; Dec. 19, 1895
Edward N. Willard (res. Sept. 1, 1897), June 28, 1895; Dec. 19, 1895
Henry J. McCarthy, June 28, 1895
Peter P. Smith, Dec. 19, 1895
William W. Porter (vice Willard), Sept. 14, 1897; Dec. 27, 1898
William D. Porter, July 6, 1898; Dec. 27, 1898
Dimner Beeber, Jan. 2, 1899
John I. Mitchell, Dec. 6, 1899

CHAPTER III.

THE MEDICAL PROFESSION

THE earliest colonists of Pennsylvania, who came over before William Penn or with him in 1682, found such wholesome climatic conditions—in spite of changes as noticed then as they are nowadays—that it appears they made few demands upon medical skill, judging from a letter written in 1685 by Charles Gordon of New Jersey, to his brother, a physician, in England, in which he says: "If you desire to come hither yourself, you may come as a Planter, or a Merchant, but as a Doctor of Medicine I cannot advise you; for I hear of no diseases here to cure but some Agues, and cutted legs and fingers, and there is no want of empirics for these already; I confess you could do more than any yet in America, being versed both in Chirurgery and Pharmacie, for here are abundance of curious herbs, shrubs, and trees, and no doubt medicinal ones for making of drugs, but there is little or no employment in this way." While not long after Gabriel Thomas wrote: "Of *Lawyers* and *Physicians* I shall say nothing, because this country is very Peaceable and Healty *(sic):* long may it so continue and never have occasion for the Tongue of the one, nor the Pen of the other, both equally destructive to Men's Estates and Lives; besides, forsooth, they, Hangman like, have a License to Murder and make Mischief." In New York, in 1758, quacks are said to have abounded like locusts and any man at his pleasure set up for physician, apothecary or chirurgeon.

But the peaceful settlers had no immunity from the common ills of mankind; and disease and injury early created a need for men trained to combat these misfortunes. Medical men and surgeons were rare, however, among the first arrivals in this country, and the records of their time furnish but scanty information in regard to the few who practiced here until nearly a century after the Swedes first came. At first the ills of the people were treated by what were known as barbers or barber-surgeons, the first of which was Jan Peterson, who was employed as "barber" on the South river (Delaware river) at ten guilders per month from the first of July, 1638, while later there was Hans Jansche in 1644, Timon Stiddem in 1655, Jan Oosting in 1657, and Peter Tyneman in 1660.

In 1682, when William Penn landed with his colony, he found here John Goodsonn as "Chirurgeon to the Society of Free Traders," who came from London and settled at Upland, and who later removed to Philadelphia, being probably the first practicing physician in the colony of Pennsylvania. With William Penn on the Welcome came Thomas Lloyd, Thomas Wynne and Griffith Owen, medical men of standing and character, trained in Europe, the latter being a preacher in the Society of Friends as well as a practitioner of medicine. These, like the other Welsh and Englishmen who first occupied this part of the colony, were well calculated to secure for it a prominence in material welfare, in scientific standing, and in morality which it soon reached and long maintained.

Lloyd, leaving a large practice in England, after settling in Pennsylvania came to be deputy governor under Penn, president of council and keeper of the great seal of the Commonwealth; while Griffith Owen was a member of the assembly, deputy master of the rolls, and commissioner of property. Wynne was president of the first assembly which met in the province, and was always a prominent and active citizen, held in high esteem though not without his detractors, to one of whom he made reply in 1679 in a vigorous and at times pathetic Account of his Early Life, denying aspersions upon his character and professional skill, sown broadcast in England in his absence. Dr. Thomas Graeme, of Scotch origin, of fine education, and of polished manners, who came here in 1717, was naval officer for the port of Philadelphia. Before him—in 1711—came the most influential of all the medical men in this colony, Dr. John Kearsley, distinguished not only for what he did but also for the disciples whom he trained for the great usefulness and distinction they afterward attained. Of these pupils he exacted services beyond those which belonged specifically to their medical studies; for they were required to

Constantin Hering

Physician; founder at Philadelphia of the first homeopathic school in the world; author of several medical works; born 1800; died 1880. Engraved especially for this work from a photograph in possession of W. E. Hering compound his medicines and go his errands and do for him other menial services, emerging from this hard school with a rare fitness for the work they were to do in their rapidly developing country. Kearsley was a man of great prominence as a citizen and interested in various public enterprises, contributing largely to the building of Christ church, one of the most ancient and interesting ecclesiastical structures in this country, and founding Christ Church Hospital for Poor Widows, a charity still vigorous in its beautiful home adjoining Fairmount Park on the west side of the Schuylkill river.

The distinction of Pennsylvania physicians at this time was not unnatural, because this was a time when in other respects this part of the country was distinguished for its position in matters of science and culture. This was the time when Benjamin Franklin was mounting to the zenith of his influence and fame, and when John Bartram was reflecting lustre on his native land by such accomplishments in the science of botany as led him to be spoken of by Linnæus as "The greatest practical botanist in the world," and to be the honored correspondent of the most distinguished botanists of Europe, while he made a contribution to the practical knowledge of botany of peculiar value in that rare botanical garden which still exists as a public park on the west bank of the Schuylkill river just below Gray's Ferry, surrounding the old house in which he lived, in a stone over the main door-way of which is carved this pious inscription:

"'Tis God alone, Almyty Lord,
The Holy One, by me ador'd. J. B. 1770."

This was also the time when David Rittenhouse reflected equal credit upon his native land by his work in astronomy and mathematics. Early distinguished for his remarkable grasp of abstruse calculations, he was only thirty-five when he constructed the orrery afterwards purchased by Princeton College, and during his whole life he belonged to the most cultivated and scientific circle in Philadelphia, in learning and skill the equal of any astronomer in the world, a man of whom Thomas Jefferson said: "Genius, science, modesty, purity of morals, simplicity of manners, marked him one of Nature's best samples of the Perfection she can cover under the human form."

A half century of Pennsylvania's history had not passed before the medical men of the colony took the first steps toward medical education in this country. The beginning of public teaching of this sort was that series of dissections and demonstrations in anatomy, undertaken about the year 1730 by Dr. Thomas Cadwalader, "for the instruction of the elder Doctor Shippen, and some others who had not been abroad." "This," the chronicler says, "probably was the first business of the kind ever done in Pennsylvania." Dr. Cadwalader was the author of one of the first medical publications in this country, a small book entitled "An Essay on the West-India Dry Gripes," the preface of which was dated Trenton, and which was "Printed and sold by B. Franklin" in 1745. In this book he records a post-mortem in 1742, which was one of the first done in the American colonies: probably second only to the autopsy on the body of Governor Sloughter, who died in 1691 under circumstances that led to the suspicion that he had been poisoned.

About this time the deep interest in educational, scientific and humanitarian matters which existed in Philadelphia was manifested in the inauguration of a number of movements which were of the greatest importance. The first of these was the establishment of the Library Company of Philadelphia—the first subscription library in North America—in July, 1731. Another was the founding, in 1743, of the American Philosophical Society, a natural development of the famous Junto or Leather Apron Club, formed in 1728 by Franklin and a few associates; another was the establishment, in 1749, at the suggestion of Dr. Phineas Bond to Benjamin Franklin, of the Academy of Philadelphia, which, passing through different stages of development, has grown into that magnificent institution, the University of Pennsylvania. Another was the foundation, in 1751, of the Pennsylvania hospital, greatly helped by the influence of Benjamin Franklin, but prompted by the suggestion and urging of another medical man, Dr. Thomas Bond. Another was the founding, in 1786, of the Philadelphia dispensary, the pioneer of such benevolent institutions in this country; another was the founding, in 1789, of the College of Physicians, then, as now, probably the most dignified medical society in this country, and owing its great prestige to the fact that it was largely composed of the very men whose force and breadth was shown by the fact that they were sufficient to include in the sphere of their activities in many cases not one, but several of these important bodies, for the roll of the College of Physicians included the names of many of the men of greatest influence in shaping the destinies of the colony and afterwards of the nation when Philadelphia was the center of its government. Of these the Academy of Philadelphia was the result of a project of Benjamin Franklin, formulated in a pamphlet entitled "Proposal Relating to the Education of Youth in Pensilvania." It began its existence in 1749 with the organization of a board of trustees, which established the Academy of Philadelphia, and on February 1, 1750, purchased a building, then incomplete and intended for a place of worship, where the celebrated revivalist, Whitefield, and other evangelists might preach, and which bound itself by the terms of purchase to establish a charity school, a plan which had been a part of the project of those who had started the "new building," but which had never been carried into actual operation.

The founders of this institution were naturally the most distinguished men of the town. James Logan, a man of eminent classical attainments and fine scholarship, had shown his interest in the subject of medicine by permitting Dr. Cadwalader, at a time when the prejudice against anatomy was very great, to use for his demonstrations a building belonging to him, situated on Second street above Walnut, on the site afterward occupied by the Bank

David Hayes Agnew

Physician; educator; author; established Philadelphia school of operative surgery and the pathological museum of the Philadelphia Hospital; born 1818; died 1892. Reproduced for this work from colored photograph in the McAlister collection.

of Pennsylvania. Benjamin Franklin himself need only be named; Dr. William Shippen was the grandson of Edward Shippen, the first mayor of the city of Philadelphia under the charter of 1701, his father being Joseph Shippen, a member of the celebrated Junto. He himself was a founder of the College of New Jersey at Princeton, and one of its first trustees. He was a member of the continental congress and otherwise a most distinguished citizen, while his son, William Shippen, jr., became so distinguished that the father was usually spoken of, not by his proper name, but as William Shippen, senior. Of others might be mentioned Dr. Lloyd Zachary, Philip Syng, Charles Willing, Dr. Phineas Bond, Richard Peters, Dr. Thomas Bond, and Thomas Hopkinson.

The trustees of the academy spent a whole year in completing the plan for a well ordered institution of learning, and, on December 11, 1750, gave notice "that the Trustees of the Academy of Philadelphia, intend (God willing) to open the same on the first Monday of January next," and on that day the school was opened, although the rooms in the "New Building" were not yet quite "completely fitted for the reception of the scholars." In consequence, the latter were summoned to meet and receive their instructions in the "large House of Mr. Allen's on Second street."

Soon after this the academy occupied what was called the New Building, at the southwest corner of Fourth and Mulberry (now Arch) streets. The academy was divided into three schools "as they were called," the Latin, the English and the Mathematical, with Dr. Francis Alison as rector of the academy and master of the Latin school, David James Dove as master of the English school, and Theophilus Grew as master of the Mathematical school, to which was added, in May, 1754, a school of philosophy covering "Logick, Rhetorick, Ethicks and Natural Philosophy," which latter probably included something of physics and what was then called chymistry. Thus at the outset was demonstrated the broad conception of its founders, and it is not surprising that within a few years it became, in name as well as in fact, the first university in North America and well deserved the encomiums of the great English traveller, Burnaby, who said it was "by far the best school for learning throughout America."

In such surroundings the academy was chartered in 1753 and in 1755 the charter was altered so that the name was made "The College, Academy and Charitable School of Philadelphia," with power to admit to the "usual University degrees." At this time the learned Rev. William Smith (later D. D.) became its first provost, and thereafter labored here and in England with unfailing zeal in its behalf until political animosities—and it should be admitted, some lack of discretion on his part—brought upon his head and then upon his college, the malignant attacks of those who controlled the legislative body in 1779. The persecution of Dr. Smith began when, after the defeat of Braddock, he translated into German, for the use of the German inhabitants of Pennsylvania, a pamphlet, written by Judge William Moore, which bitterly denounced the Quakers, who at that time controlled the provincial assembly and to whose opinions on the unlawfulness of war he ascribed the defeat of the Germans and the absence of preparations to avert the danger. He soon found that, although the Quakers opposed war, they were not devoid of the combative spirit nor without a disposition to show their animosity in a very effective manner. On a charge of contempt to the legislature Mr. Smith was committed to jail; where he received this flattering evidence of the devotion of his pupils, that they gathered in the street while he delivered his lectures to them from the jail window. At this time the College of Philadelphia was easily the leading educational institution in the country, decidedly surpassing the older colleges; William and Mary in Virginia, Harvard and Yale in New England. It was thronged with students from all the colonies and from the adjacent islands, being of such distinction that in 1754 the Maryland Gazette stated as a matter of pride that there were at least one hundred Maryland students in the Academy at Philadelphia, and it may be safely affirmed that in 1756 no such comprehensive scheme of education existed in any college in the American colonies.

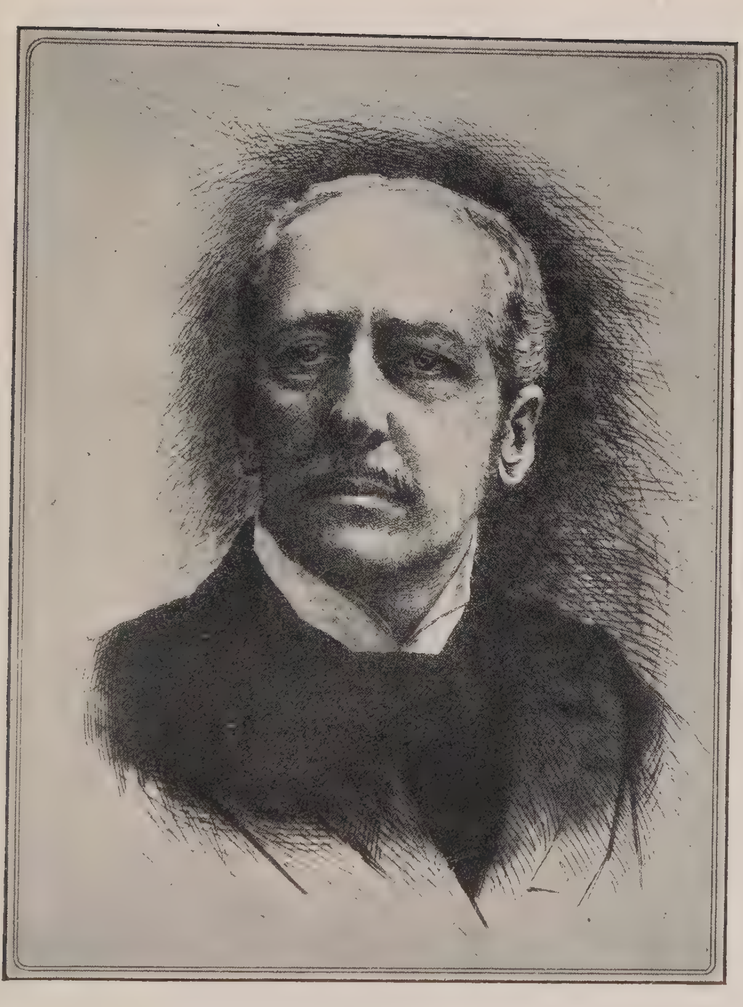
Thus advancing, in 1765, Dr. John Morgan, a native of Philadelphia, a graduate of the first class in the College of Philadelphia, a man of extraordinary personal qualities and scientific cultivation, who had received the most flattering evidences of appreciation from learned men and learned societies while he was completing his studies in Europe, returned to this country with a plan for the foundation here of a medical school, which was adopted by the trustees of the college and the work begun by electing him, on May 3, 1765, professor of the theory and practice of physic. On September 23, 1765, Dr. William Shippen, jr., a graduate of the College of New Jersey, who had also finished his medical studies in Europe and there secured the approval of distinguished teachers, and who had been a successful lecturer on anatomy in his native city, was made professor of anatomy and surgery. In connection with these lecturers Dr. Thomas Bond, one of the physicians to the Pennsylvania hospital, began, on December 3, 1766, a regular course of lectures on clinical medicine there, which, although he had no official connection with the teaching at the College of Philadelphia, became an essential part of medical education in this city and attendance upon them was, in 1767, made obligatory upon the students of the medical school. In 1768 the medical faculty was enlarged by the addition to it of Dr. Adam Kuhn, in 1769 by that of Dr. Benjamin Rush, whose abilities and reputation attracted to the young institution constantly growing classes of students. Both of these men were well fitted to occupy a conspicuous place in he public eye. Kuhn was a botanist known to those who cultivated this science all over the world, and used his knowledge in this department of science in the teaching of materia medica and botany for twenty-one years. Rush was so great a man, and so long occupied the highest position in the practice and teaching of medicine in this country, that it is hard to conceive of him as occupying a professorial chair in the College of Philadelphia—the first chair of chemistry established in North America—when only twenty-four years old; but like his colleagues he brought to his work the ardor of youth and a judgment worthy of more mature years.

In appreciating the men of these times it is well to recall just what these times were. This was that era in the history of the country when it was going through the changes which led up to the war of the Revolution and the Declaration of Independence, a time when men's feelings were strong and their actions were too conspicuous to escape with small praise or small blame. Thus among the greatest men of the time we find one like Rush, with all his loyalty and devotion to his country exhibiting on one occasion an attitude toward Washington which has led to severe criticisms, but he and a host of others not only pledged their lives, their fortunes and their sacred honor to the cause of independence, but in some cases actually made sacrifice of all these; some lost their lives; others their fortunes; and in some unhappy cases others lay for a time under an undeserved stigma of dishonor. Here in Philadelphia Morgan—a noble spirit to be so sorely tried—suffered an unwarranted humiliation and received too late the vindication of an impartial congress.

The greatness and fame of the medical school of the College of Philadelphia, from which the first graduates in medicine in North America were given their degree June 21, 1768, increased from year to year. While its earliest rival, the department of Medicine, King's College, New York, founded in 1768, led a weak and precarious existence, which practically ceased during the war of the Revolution, the medical school of the College of Philadelphia suffered only an interruption during the time—September 26, 1777, to June 18, 1788—when the city of Philadelphia was occupied by British troops, when some of its teachers and many of its students were engaged with the patriotic army, and when its buildings were seized and turned to military use by the soldiers under General Howe. As soon as this ended, teaching was renewed and continued with the varying fortunes of the college itself, until, in 1779, the activities of the latter were iniquitously suspended by the legislature of the State of Pennsylvania, and its charter was declared void; while, to assert its authority and show its power, the legislature forfeited the property of the college to an institution which it incorporated under the title of the University of the State of Pennsylvania. After this institution had vainly struggled for a time to profit by its possession of its elder brother's birthright, the natural difficulty of the situation was further enhanced in 1789, when a new legislature restored the rights of the College of Philadelphia and declared the doings of its predecessor to have been "repugnant to justice, a violation of the constitution of this Commonwealth, and dangerous in their precedent to all incorporated bodies." Two years later, in 1791, under wise counsels, the new university and the college were united under the title of the "University of Pennsylvania;" which continued the career of usefulness of the college, and developed to what it is at this day. About this time its halls were graced with a most distinguished faculty; Morgan in broken health had retired from the field, but Shippen, with remarkable ability, still taught anatomy, illustrating his lectures with his own preparations and the beautiful models he had brought to the Pennsylvania hospital as a present from Dr. Fothergill of England; Adam Kuhn, a pupil and friend and honored correspondent of Linnæus, was at first professor of materia medica and botany and afterwards of the practice of medicine; Benjamin Rush, whose position was so high that he was spoken of as the Sydenham of America, taught the institutes of medicine; James Hutchinson had succeeded Rush in the chair of chemistry; Samuel P. Griffiths taught materia medica and pharmacy; and Benjamin Smith Barton taught botany and natural history; while not long after, the chair of surgery was created for its first occupant, Philip Syng Physick, the

"Father of American Surgery," with whom for a long time there was no man comparable in the country. Shippen, as early as 1765, by his personal conduct and a series of lectures that he gave, did much to rescue from its unworthy position that department of practice which has to do with the introduction into the world of those who are to continue its activities. This branch of practice had before been relegated almost entirely to ignorant women; and, although in Europe it had been for some time associated with the practice of surgery, this was only in extreme and dangerous emergencies; and it was a genuine service to womankind when it was shown to be worthy the attention of well-trained medical men. The first professorship of this branch in North America was established in 1810, when Thomas Chalkley James was made professor of midwifery in the University of Pennsylvania.

Soon after this there came upon the stage one of the most brilliant medical men of this country; of whom at his death Dr. Hosack of New York said: "There are comparatively few of the physicians of our country, at this time in the practice of their profession, who have not been indebted to him for their instruction in that department of medical education in which he so eminently excelled." This was Caspar Wistar, who continued the teaching of anatomy, so ably begun by Shippen, with rare ability as a teacher and singular inventive skill in methods of demonstration, whose models and anatomical preparations, supplemented by those of his distinguished successor in the chair, Dr. William E. Horner, formed for years the celebrated Wistar and Horner museum of the university, and later the basis for that magnificent establishment, endowed by his great-nephew, General Isaac Wistar, in 1892, which now forms a portion of the schools connected with the University of Pennsylvania. The practical work of Physick found an able literary representative in the "Elements of Surgery," published in 1812 by John Syng Dorsey, his nephew and assistant, whose untimely end cut short a career the brilliancy of which suggests that of the lamented Bichat in France. After these



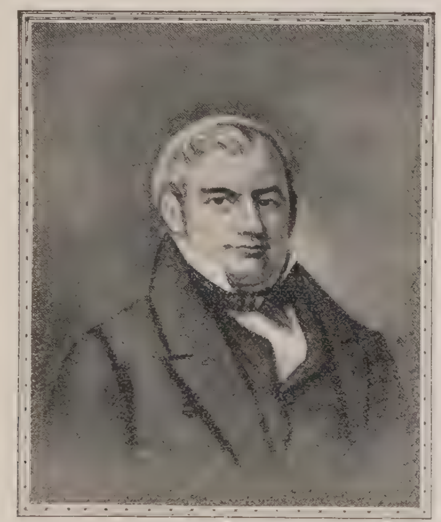
William Pepper

Born, 1843; died, 1898; physician; educator; author; provost University of Pennsylvania, 1881-1894

came William Gibson, also the author of a work on surgery and professor of surgery in the university, and Henry H. Smith, whose work as an author and as a practical surgeon ably seconded that of Gibson; while later D. Hayes Agnew from 1871-1889 occupied this chair, loved as a man and honored as a surgeon.

To give any full idea of the attainments of those who for a hundred and fifty years added to the lustre of the department of medicine of the university would be to name almost the whole roll of its professors. But, besides those mentioned should be named Thomas Chalkley James, who, in 1810, was made the first professor of midwifery in this country, with his successors in this branch: William B. Dewees and Hugh L. Hodge, authors of valuable books on the subject, and R. A. F. Penrose, who survives, a noble relic of the times when great men rose like mountain peaks above the general level. Mention should also be made of the brilliant, the versatile, the facetious Nathanial Chapman, and of his successor, the profound and learned Dr. George B. Wood, and of Dr. David Jackson, whose personal attractions were as great as his intellectual attainments, the first incumbent, in 1853, of the chair of institutes of medicine, of William W. Gerhard, of Joseph Carson, of Robert E. Rogers, and of Alfred Stillé—brilliant exemplars of what was accomplished by able minds before the science of medicine had the assistance of recently invented instruments of precision and methods of experimental investigation; of Henry H. Smith, John Neill and John Ashhurst, jr., skillful and learned surgeons; of Joseph Leidy, the patient, modest, profound student of anatomy and natural history, one of the greatest scientific investigators of the nineteenth century; of William Goodell, one of the pioneers in the specialty of gynæcology, and of William Pepper, whose Napoleonic genius contributed so much to carrying forward the plans for developing the university set on foot by his predecessor in the provost's chair, Charles J. Stillé.

When John Morgan made his address at the opening of the Medical school in the College of Philadelphia he looked forward to the time when it might "give birth to other useful institutions of a similar nature." This prediction has been abundantly fulfilled. The second school of medicine in Philadelphia, and one which soon rose to a position of eminence which made it second in rank as well as in point of time, was organized by a graduate of the university, Dr. George McClellan, who, fired with an extraordinary ardor, in 1824 induced the trustees of Jefferson college in Washington county, Pennsylvania, to establish a department in Philadelphia to be called The Jefferson Medical College. In 1838 the medical college was made an independent corporation by the legislature "with the same powers and restrictions as the University of Pennsylvania." Unfortunately about this time there were dissensions in the faculty, which was dissolved by the trustees in June, 1839, and a new one was appointed which bore, in place of the name of Dr. George McClellan, the founder of the college, that of Dr. Joseph Pancoast, who was soon to succeed him as one of its greatest glories. Dr. McClellan's remarkable boldness and aggressiveness served well to establish the Jefferson college, but seem to have been less suited than other qualities would have been to continue its career without disturbance. Personally he was one of the most remarkable surgeons that this country has ever known. The Jefferson college had a varying success until 1841, when there was a new crisis, and all the chairs were again vacated and a third faculty was appointed, made up of Dr. Robley Dunglison, professor of the institutes of medicine; Dr. J. K. Mitchell, professor of practice; Dr. Joseph Pancoast, professor of anatomy; Dr. R. H. Huston, professor of materia medica; Dr. T. D. Mütter, professor of surgery; Dr. Charles D. Meigs, professor of obstetrics; Dr. Franklin Bache, professor of chemistry. At this point the college entered upon a career of great activity and prosperity, its teachers being remarkable for their ability as practitioners and as instructors. It soon attracted to itself very large classes, many students coming from what was then the southwestern part of the country, and especially after Dr. Samuel D. Gross succeeded the brilliant Mütter as professor of surgery. Gross, who was a native of Pennsylvania and a graduate of Jefferson college in 1828, had been a popular professor in Cincinnati and Louisville, and now proved a tower of strength to his alma mater, and his learning, his skill as a writer, his abilities as a teacher, his commanding presence and his impressive manners, with the rare abilities of Pancoast as an anatomist and as a surgeon, and the success of Dunglison, Mitchell, Meigs and Bache in their various chairs, soon brought the Jefferson college to a very high position in the medical world. In 1872 the strength of the faculty was increased by the addition to it of Dr. J. M. Da Costa, whose teachings and writings soon secured for him a world-wide reputation. The Jefferson College was first opened in the "Tivoli Theatre," now No. 518 Locust street, which was altered to suit the purposes



George Wolf

Member State legislature, 1814; congressman, 1824-1829; governor, 1829-1835; comptroller of United States Treasury, 1836-38 of the medical school. In 1828 this was moved to the new building on Tenth street near Sansom, which it so long occupied and to which has been added only recently the very handsome and well-equipped edifice which stands upon the Northwest corner of Walnut and Tenth streets. The reputation of the Jefferson Medical college was largely due to the striking figures who made up what is known as the "Faculty of 1841." In this remarkable group of men was the learned Robley Dunglison, whose mind seemed able to embrace every department of knowledge that time permitted him to touch; Robert M. Huston, the patient and faithful teacher of therapeutics and for sixteen years dean of the faculty; Joseph Pancoast, that great practical anatomist and surgeon, whom none can appreciate who have never heard and seen him in his work; John K. Mitchell, who so brilliantly filled the chair of the practice of medicine; Charles D. Meigs, who, after a reluctant entrance upon the practice of midwifery, came to treat the subject with so much feeling that he made it almost poetic, but who held the singular notion that it was impious to attempt to prevent the pain of child-birth by the use of anaesthetics; Franklin Bache, professor of chemistry, a learned teacher and collaborator with Dr. George B. Wood in the preparation of the everywhere-known United States Dispensatory, of whom his college bore witness that he was an example of all that is morally excellent, lovely and of good report in manhood; and Thomas M. Mütter, whose brilliant but brief career has been noted above. When to these was added Samuel D. Gross, whom his admirers would on one public occasion have clothed in royal purple—so much did they admire and love him—there was a faculty that might well command success and carry the fame of the Jefferson college to the ends of the earth.

The restless spirit of Dr. George McClellan did not permit him to remain long in entirely private practice. After the termination of his connection with the Jefferson college he set to work promptly to establish another medical school; and, imitating his previous method, he now persuaded the trustees of the Pennsylvania college at Gettysburg to establish in Philadelphia a department of medicine, which began its work in a house on Filbert street above Eleventh. This institution was as unfortunate in the matter of dissension as that which he had before inaugurated. In 1843 all the members of the faculty resigned and McClellan retired to private practice. The wrangling between the university and the majority of the succeeding faculty had to be settled by an appeal to the courts and seriously affected the prosperity of the college, which, though it had a temporary success, and at one time a faculty containing men whose standing in the profession was high and whose success in other institutions was great, was finally discontinued in 1861.

The fourth school, the Philadelphia College of Medicine, was established in 1847 by Dr. James McClintock, who in 1838 had been at the head of a private school for medical teaching. In seven years this institution, which gave summer and winter courses, first in a building on Filbert street above Seventh, and in 1847 in one on Fifth street, west side, south of Walnut, graduated four hundred men; and in 1859, upon the resignation of the faculty of the Pennsylvania Medical college, the professors in the former took the chairs of the latter, and merged its existence in that of the Pennsylvania Medical college, and removed to the building which this school had occupied on the west side of Ninth street below Locust. But the end came in 1861, when the enterprise was finally abandoned.

In 1846 a fifth school was incorporated under the title of the Franklin Medical college, which occupied a building on Locust street above Eleventh. This school lasted only for two sessions, and then ceased to exist.

The sixth medical college established in Philadelphia was one which is not only interesting in itself, but which has exercised a very broad influence on medical education in the world. In 1850 a few persons who belonged to a distinctively advanced type of thought organized the Female Medical College of Pennsylvania, the first medical school for women in the world, which from a small beginning has increased until under its present name, the Woman's Medical college, it is one of the most useful medical institutions in the world, at first occupying buildings in the rear of what is now 627 Arch street and graduating eight women on December 30, 1851, among them Ann Preston, a very distinguished and enterprising woman, who, in 1852, was elected professor of physiology and hygiene—the first woman to be a professor in a medical school in this country. In 1853, Dr. Preston became the

Henry Marie Brackenridge

Son of Hugh Henry Brackenridge; author; General Jackson's private secretary in Florida 1821; United States judge Western Florida District 1821-1832; elected to Congress from Pittsburg, 1840, but accepted commissionership to negotiate treaty with Mexico. Engraved especially for this work from an original photograph in the collection of the late John Tibby ruling spirit in the institution and managed to free it from some of the unfortunate features which had hitherto characterized it and to raise its standard of proficiency to that of the best medical colleges—in fact in advance of most of the medical colleges in the country. In 1867 the title was changed to the Woman's Medical College of Pennsylvania, and it now has a large class and an important corps of teachers, some of one sex and some of the other, and its graduates have carried the art of healing into the most remote corners of the world, in some cases their sex furnishing them with opportunities which could not possibly be shared by men. Fully equipped with a hospital and laboratory, it is not surprising that its members point with pride to the fact that the graduates of the Woman's Medical College are second to those of no other medical school in their success in meeting the requirements of public examining boards.

The seventh medical school established in Pennsylvania was the Medico-Chirurgical College. This was built upon a project, in 1848, which contemplated a society and not a teaching institution, and which was incorporated in 1850. On April 10, 1867, it was changed from a medical society to a teaching body by an act conferring upon it rights similar to those of the University of Pennsylvania. Nothing came of this, however, until 1880, when the upper floors of a bank building on the southwest corner of Market street and West Penn square were secured for the purposes of the institution. Here it led a feeble existence for a number of years, and in 1886 acquired the property on Cherry street east of Eighteenth, which before had been occupied by the "Home for Aged and Indigent Women." Here the Medico-Chirurgical college and the Philadelphia Dental college worked together until 1895, a period of ten years, when their union was dissolved, and the Dental college was removed to its own proper building. Since then the Medico-Chirurgical college has enlarged its work considerably and has seen its classes grow to large numbers, while it has enjoyed great liberality from the State legislature.

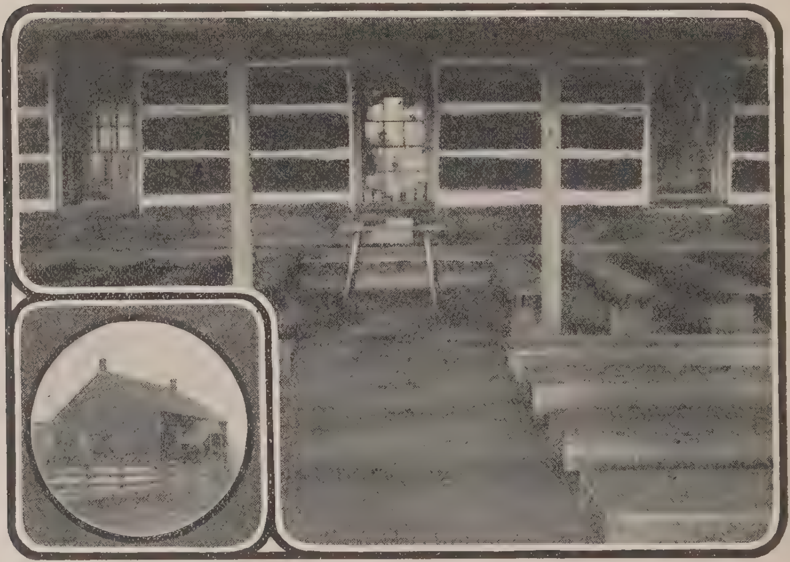
The most recently established medical school in Pennsylvania is the department of medicine of the Temple college of Philadelphia, which was opened in 1901 and has a curriculum covering a five years graded course, with five sessions of nine months each, the entire work being done in the evening, so as to accommodate persons desiring to study medicine whose daylight hours are otherwise occupied. It is carried on in connection with the Samaritan hospital, which furnishes opportunity for clinical instruction.

What is known as the "Eclectic School" of medicine had some followers in this country and in Pennsylvania more than a hundred years ago; but it had no representative school in this State until 1848, when there was established in Philadelphia the "Eclectic Medical College," which continued in existence until the time of the civil war, when it fell into the hands of men who brought the singular but sincere views of the founders of this sect into scorn and the name of the institution into disgrace. This came about when its franchises with those of the "Penn Medical University," which in 1853 undertook to furnish a medical education covering "all systems of practice" to persons of both sexes, came into the possession of the "Philadelphia University of Medicine and Surgery," an institution which went beyond both its predecessors in the peculiarities of its conduct. The seclusion of its chief officers at the expense of the State put an end to a period, following the civil war, when Philadelphia had an unenviable notoriety through the operation of institutions, most of which took a name which might be confused with that of the University of Pennsylvania, and which issued fraudulent diplomas to persons who were willing to pay for that sort of thing.

Wherever the scientific standing of medical men excels there is, as a rule, not only the establishment of successful medical schools, but also achievements in the field of literature which supplement the skill and success which marks their practice. So in Pennsylvania the past has furnished examples of great success in letters; medical books and periodicals came from the presses of

Philadelphia which had their full share in maintaining its reputation as a medical centre. The greatest glory of American periodical medical literature was undoubtedly the American Journal of the Medical Sciences, a quarterly which survived all of the foreign medical quarterlies with one exception; and, like this one, is now issued as a monthly magazine. The American Journal of the Medical Sciences for many years contained all the serious medical productions of this country which could properly be called memoirs, and its pages devoted to reviews were so admirably filled that it has been truly said that, were all the other productions of the press at the time of its existence destroyed, it would be possible to reproduce from its files alone the best that had been contributed to medical science during that period. To this great work no man contributed as much as Dr. Isaac Hays, who for more than fifty years was the wise and successful guide of its literary career. With characteristic wit the first editor, the brilliant Dr. Nathaniel Chapman, when it was started in 1820 under the title of the "Philadelphia Journal of the Medical and Physical Sciences," printed on its title page the malicious fling of Sydney Smith: "In the four quarters of the globe, who reads an American book? What does the world yet owe to an American physician or surgeon?" And abundantly well has this great journal shown how false was the estimate of what America produced. Since that time various other journals have been published here. In 1842 a journal which had been first published in New Jersey was transferred to this city and for years had a large following especially among practitioners of the country. This was the Medical and Surgical Reporter, which eventually succumbed before the fierce rivalry of journals of more modern style and supported by the capital of large publishing houses. The most important journals issued to-day in Philadelphia—beside the American Journal of the Medical Sciences—are the "Philadelphia Medical Journal" and "American Medicine," which fully represent modern thought, modern enterprise and the present standards of medical ethics.

Another important medical enterprise which is largely due to the activity of Pennsylvania medical men is the American Medical association. The history of this great national body is of intense interest, as it really reflects very thoroughly the progress of sentiment in this country in regard to what is best in medical practice and in medical life. Its birth was largely due to the dissatisfaction felt by a number of medical men, among whom those teaching medicine in Philadelphia were conspicuous by their personal character and high professional standing, with the defects of the system of medical education due to the practical lawlessness with which it was conducted. Their great object was to bring the most representative men of the profession together so that



Dunker Church and Interior, Blooming Grove, Lycoming County

Built 1828. Photographed especially for this work from original copies in possession of Joseph H. McMinn they might unitedly set up a standard of excellence in public and private conduct to which all right-minded medical men might give their adherence. With this purpose the American Medical association was organized in Philadelphia in May, 1847; and it is interesting to note that most of the aims of the men then and there gathered have been attained, some not so perfectly as might be wished, but quite as well as might have been expected, in view of the difficulties adherent in the political development and the social condition of the people of the United States. Another interesting episode in the history of medicine in Pennsylvania was when an International Medical Congress was held in Philadelphia in 1876, coincidently with the "Centennial Exhibition." This brought together a large number of distinguished medical men from this and other countries, and those who came saw with what equal dignity and lustre the leaders of American medical thought and practice compared with those who came here as guests. Our surgeons equalled them in boldness and in dexterity, and our practitioners of internal medicine needed to yield nothing to them in learning, in culture, in elegance of style and in success as healers of their fellow-men. Among the editors sat one whose fame since that day has reached world-wide proportions, Mr. Joseph Lister of Edinburgh, since then Sir Joseph Lister and Lord Lister, who explained and urged upon his hearers that method of "antiseptic surgery," which, with its various modifications, has revolutionized the practice of surgery and contributed probably more in the way of life and health to mankind than any curative measure which ever has been devised.

An indispensable adjunct of medical progress is the hospital. In this Pennsylvania has been always in the van. So early was this particular feature of civilization developed, that there has been a friendly contention between the great Pennsylvania hospital and what is now called the Philadelphia hospital, that is, the medical department of the alms house, or "Bettering House," as it was at first called, as to which was earliest in existence. In this matter there can be no question that the Pennsylvania hospital was first organized as a hospital, and the fact that the alms house before that had its sick treated by physicians, and in one particular part of the building, furnishes for it no better claim to priority than could probably be advanced by the jail of that time.

The Pennsylvania hospital, which was established in 1751, is a monument to the benevolence and sagacity of Dr. Thomas Bond and Benjamin Franklin and their colleagues. Its history is romantic; it was the first general hospital established in this country, the New York hospital building being begun only in 1773 and the Massachusetts General hospital being opened only in 1821, and it has always been in certain respects the greatest hospital in the country, although happily there are now a number of institutions that deserve to be classed with it in every respect except that of age. Founded and governed principally by Quakers, it was supported by contributions of citizens of every class and aided by the generosity of the proprietaries. During the war of the revolution it went through the vicissitudes incident to the capture and occupation of Philadelphia by the British from September 26, 1777, to June 18, 1778, but its career has been one of almost uninterrupted prosperity. Its managers from the beginning have been men of the highest standing in the community and of a prudence leaving nothing to be desired. Its physicians have been the very best that Philadelphia could furnish; and to be, or to have been, connected with this institution in an official capacity is a sort of patent of nobility, while its ministrations to the sick—always the chief object of its existence—have been of inestimable worth.

But the charitable work of caring for the sick who cannot be cared for in their homes has never been neglected in any part of this State. Every city contains its important hospital, and in many of them the work of benevolence has been accompanied by developments in medical science and surgical skill which are a part of the natural reward of such altruism. In Pittsburg an important medical school has grown up with the progress of the hospitals in that city, and elsewhere physicians and surgeons have been developed who have contributed no small share to the high standard of the profession in general in this State. In Philadelphia each of the medical schools has a large and useful hospital, and almost every one of the principal religious denominations supports one which is a credit to it. In connection with each one of these there is a dispensary service—in many cases so large that it is sometimes thought the benevolence of the medical profession is sorely abused by those who in this way get its gratuitous services. All the dispensaries are followers of that interesting institution, the Philadelphia dispensary, enjoying that peculiar and, for Philadelphians delightful, characteristic of age, without any abatement of its power and usefulness, which was established in 1786 through the efforts of Dr. Samuel P. Griffitts, beginning its existence in a house in Strawberry alley and afterwards occupying the building constructed for its occupancy, still in use, on the east side of Fifth street, north of Walnut.

In this immediate connection also should be noticed the efforts that have been made by the State for the care and relief of its unfortunate insane patients. Public asylums or hospitals, thoroughly endowed and equipped for this humanitarian purpose according to the best modern principles and practice, are now in existence in various parts of the Commonwealth, which are presided over and their departments administered by the best professional talent that can be procured. The first of these beneficent institutions was the Pennsylvania State Lunatic Hospital, located at Harrisburg, which was established under an act of April 14, 1845, and opened in 1851. The present value of its property is about half a million dollars.

The Western Pennsylvania Hospital for Insane is situated at Dixmont, Alleghany county, and was established under the act of March, 1848. The cost of the buildings was about $300,000. The original institution, known as the Western Pennsylvania

Hospital, was opened in March, 1853, and the Department for Insane, at Dixmont, was opened in November, 1862. The institution includes a farm of 373 acres of land.

.The State Hospital for Insane, located at Danville, was established under an act of April 13, 1868, and opened in 1872. A farm of 397 acres is included and the present value of the property is over one million dollars.

A State Hospital for Insane was provided by an act of August 14, 1873, which is situated at Warren. Its cost was over $900,000.

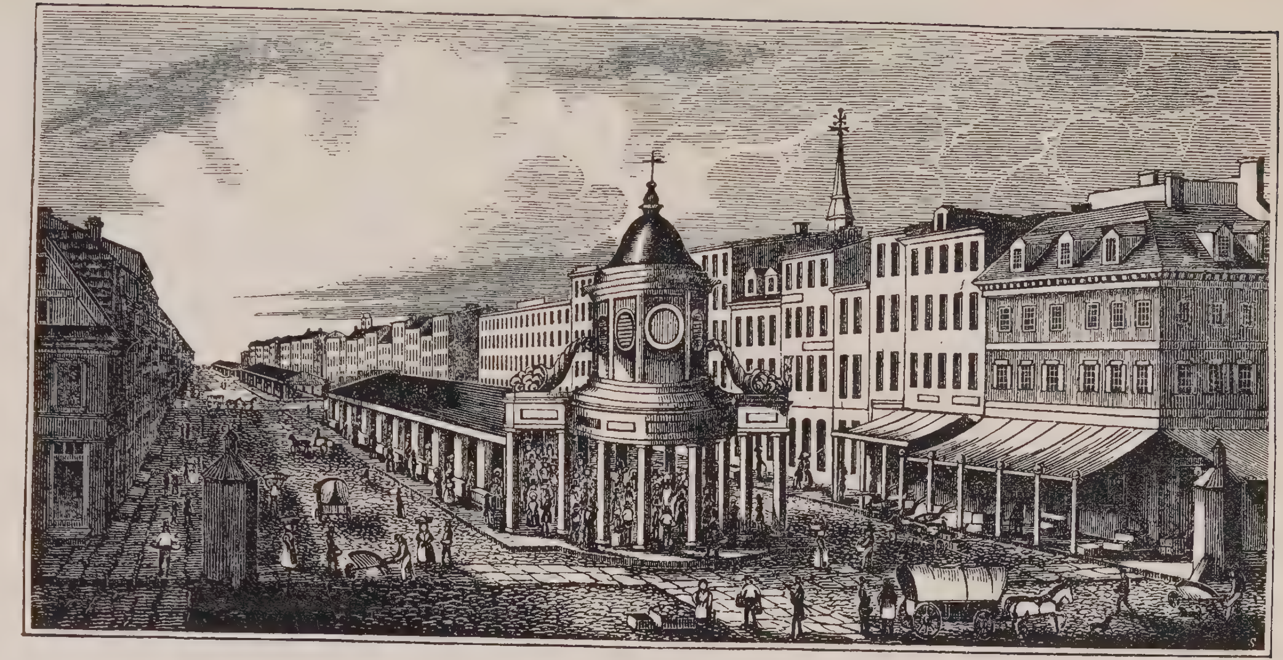
The State Hospital for Insane for the southeastern district is situated at Norristown. It was established under the act of May 5, 1876, and was opened in July, 1880, at a cost of over $1,000,000.

The State Asylum for Chronic Insane, located at South Mountain, Berks county, was established in June, 1891, and completed in July, 1894. The institution has a farm of 538 acres, and the buildings cost $412,000.

A kindred institution, the State Institution for Feeble Minded Persons, situated at Polk, Venango county, was established by an act of June 3, 1893. Its land estate comprises 870 acres and the institution accommodates 700 inmates. It was opened April 21, 1897.

Besides all these great institutions for the relief of suffering humanity, the State maintains several Cottage State Hospitals for relief of injured persons in the coal industry.

As might be expected, the State of Pennsylvania, which contributed so much to the conduct of the medical part of the war of the Revolution bore a large share in that of the Civil war, 1861-65. Not only did it furnish its share of the surgeons of the army and navy, but, because by its peculiar position it was practically safe from direct attack and at the same time conveniently near to the seat of war, it was a favorable point for the establishment of military hospitals. Some of the largest of these were situated in Philadelphia, and that known as the Satterlee hospital, in West Philadelphia, occupying ground just north of the Baltimore turn-



Market and Front Streets, Philadelphia

From Day's Historical Collections

pike and west of what is now Forty-third street and what was then a ravine through which a beautiful stream meandered, was not only the largest military hospital in Pennsylvania, but the largest in the country, where was developed an idea in hospital construction, the "pavilion plan," of the greatest value at that time and which later became the type of hospital construction.

The events of the war with Spain are so recent that they do not furnish much material for history, and though they were not lacking in stirring events and gallant achievements, they were not of such magnitude as to demand a place in this sketch.

Thus far the description of the medical movements in this State has covered the part where it was first settled; but, as there were brave men before Agamemnon, so other parts of the State have equally with Philadelphia and its vicinity brought forth men of high character and attainments. The extreme western part of Pennsylvania from beginnings marked by cruel strife with Indians and the French, by battles and massacres, by desperate struggles and heroic victory, with which the names of Pontiac and Duquesne, of Washington and Braddock, are associated, moved forward to a stage of development in which vast industries, immense traffic and great educational enterprises cover the ground so hardly won for civilization and culture.

The earlier medical men came hither with the Virginia troops that were sent to rescue the country from the French and Indians. Of these was Dr. Thomas Walker, commissary-general under Washington at the time of Braddock's defeat, who gave their name to the Cumberland mountains, and whose own name was given to another range; Doctor Anderson and Doctor Colhoun, who were in the same expedition, and Dr. James Craik, who dressed Braddock's wounds after his defeat, on July 9, 1755. Another medical man on this expedition was Dr. Hugh Mercer, a Pennsylvanian, born in Scotland and formerly a surgeon in the army of Prince Charles, who fled to this country in 1747, after the battle of Culloden, became a brigadier-general in the Revolutionary war and died of wounds received in the battle of Princeton, whose fame is commemorated by a monument in Laurel Hill cemetery, Philadelphia, and a county that bears his name.

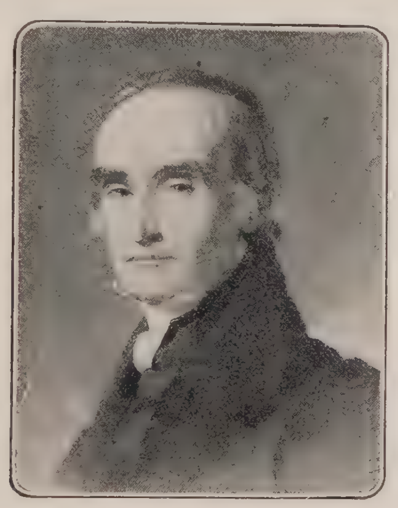
With the cessation of the old wars, settlement received an impetus in Western Pennsylvania, and among the pioneers from 1770 to the close of that century were many physicians whose professional qualifications and characters should perpetuate their memory. The first of these of whom there is authentic account was Dr. David Marchand, who settled in 1770 in Westmoreland county about six miles southwest of Greensburg. He was a native of Switzerland and one of the refugee Huguenots. He was a man of excellent natural as well as acquired ability, and until his death, on July 22, 1809, had a large practice. He built a two-story stone house near his home for the accommodation of his many patients, thus opening the first general hospital west of the Alleghany mountains. He left three sons, all of whom became eminent in the profession in Western Pennsylvania, and one of whom also had three sons who followed in the footsteps of their grandfather.

Not many years later, Dr. Frederick Marchand, brother of the first Dr. David, migrated from Maryland and settled near his brother. He paid more attention to farming than to his profession.

General Washington gave a dinner at Semples's tavern in Pittsburg in 1770, at which one of the guests was Dr. John Connolly, who married the daughter of the landlord. He is said to have studied medicine with Dr. Cadwallader Evans, in Philadelphia, and was a clever and attractive person. Later he became interested in the land-grabbing scheme of Governor Dunmore, of Virginia, and when it became known at the opening of the Revolution that he had planned to make Fort Pitt an important British post, he was arrested and imprisoned. After the war he settled in Canada.

In 1772 another of the many doctors who held military commissions in those troubled times settled in Pittsburg; this was

General Edward Hand, who came to America as surgeon of the 18th Royal Irish regiment. Resigning his commission to practice his profession, he afterwards espoused the side of the colonies in the Revolution and rose to the command of Fort Pitt, with a brigadier-general's commission. He died at Rockford, Lancaster country, September 3, 1802.



Joseph Hopkinson

Wrote "Hail Columbia" 1798; congressman 1816-1820; United States district judge 1828; member State Constitutional Convention 1837; president Academy of the Fine Arts many years.

General William Irvine, who took command at Fort Pitt in 1781, was educated as a physician and served seven years as surgeon on a British man-of-war. He was a native of Ireland. After peace was declared he settled for practice in Carlisle, where he attained deserved success. He was twice elected to Congress and died in 1804. He had a grandson, Dr. William A. Irvine, who practiced in Warren county.

Uniontown, Fayette county, situated at the foot of the western slope of the mountains and on the line of Braddock's route, in the midst of an excellent farming district, attracted early settlers, with whom came a pioneer physician in the person of Dr. Samuel Sackett. He had been a surgeon in the American army and came west from Connecticut in 1781. He was in active practice in the vicinity of Uniontown about forty years and died in 1833. About four years earlier than this Dr. Henry Moore was practicing in Buffalo township, Washington county. The incident of his trepanning the head of a little girl, whose skull had been fractured by an Indian, is recorded. He died in Washington, Pa.

Dr. John Knight was also a resident of Fayette county. He was a private, then surgeon's mate, and in 1782, at the request of Colonel William Crawford, was appointed surgeon in the oncoming expedition against the Indians. In the terrible rout and massacre that followed, Dr. Knight and his colonel became separated from the fleeing troops and they were captured by the Indians. The doctor was forced to witness the torture and death at the stake of Colonel Crawford, a fate from which he was unexpectedly saved. His face had been painted black and he was sent on ahead with one powerful Indian. In the evening the mosquitoes were very troublesome and the Indian, determined to escape the pests at Dr. Knight's expense, released him and ordered him to take a brush and drive away the insects, while the Indian prepared some supper. This was Knight's chance, and he quickly grabbed a heavy club, struck the savage with all his might on the back of the head and fled. He reached Fort Pitt only after many days of incredible suffering and privation in the forest. Dr. Knight died in Shelbyville, Ky., March 12, 1838.

Another physician who accompanied the Crawford expedition was Dr. John Rose, as he was known in this country, but whose true name was Henri Gustave Rosenthall. He fled from his native country on account of having fought a duel, changed his name and rose to distinction by his bravery and talent. Receiving immunity from his sovereign, he returned to his native country in 1784.

In 1783 Dr. John David Schoeff visited Pittsburg on his travels. He was the first person to cross the Alleghany mountains in a carriage. In the next year Arthur Lee, commissioner to treat with the Indians, passed through Pittsburg and left this among his records: "There are here four attorneys, two doctors and not a priest of any persuasion, nor church nor chapel, so that they are likely to be damned without benefit of clergy." He added: "The place, I believe, will never be any considerable." One of these two doctors was Nathaniel Bedford, who probably had formerly been a surgeon in the British army. For many years in his home in Pittsburg he affected the style of the British aristocracy. He was a man of superior education and polished manners. He died March 21, 1818. Dr. John F. Carmichael, of New Jersey, who entered the army in 1789, assisted Dr. Bedford in treating Red Pole, who was detained ill in Pittsburg, Christmas day, 1796, and died there. Dr. Bedford laid out Birmingham. The other physician mentioned by Arthur Lee was probably Dr. Thomas Parker, whose name appears with Dr. Bedford's in the list of trustees of Pittsburg academy, 1787.

The next physician in Pittsburg was born there September 14, 1770, in the person of Dr. Peter Mowry. He was a very successful practitioner and rose to distinction. He died at the age of sixty-three years, leaving two sons, William and Bedford, both of whom were physicians, but who died in early manhood. One of his students was Dr. Robert Mowry, for many years a distinguished physician of Alleghany, whose son, Dr. William B. Mowry, is now a prominent practitioner in the same city.

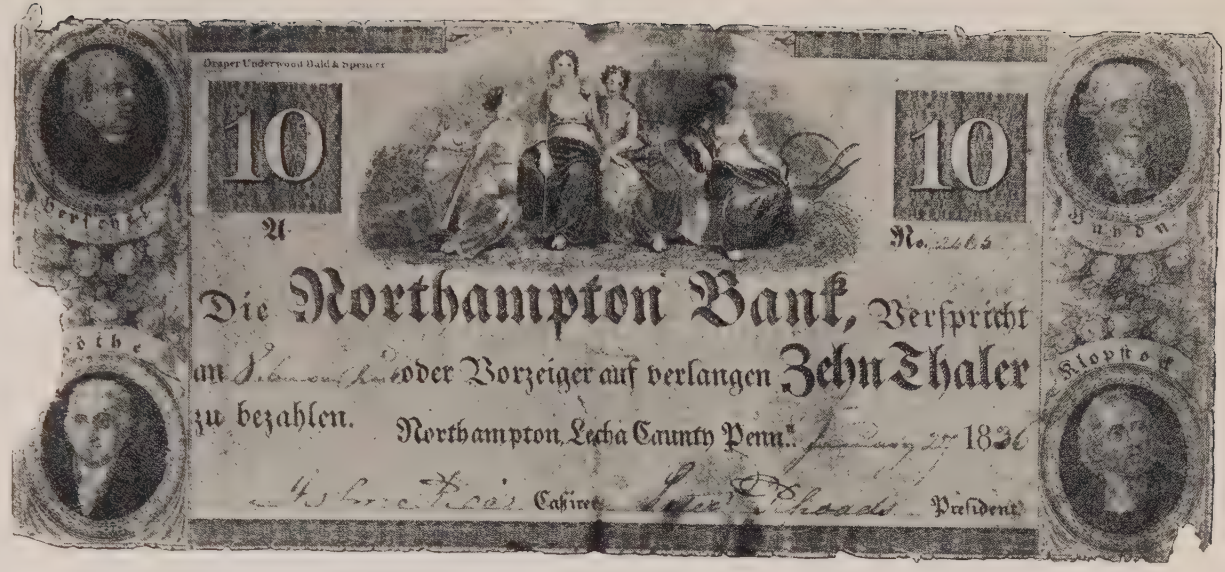
As settlement in the western part of the State advanced the number of physicians was rapidly increased, the list including many names of those who honored their profession. Dr. McKenzie was the principal surgeon at Fort Pitt in 1788. Dr. Adams was there from 1794 to 1797, and from 1795 to 1796 a

Dr. Wilkins was known there. Dr. George Stevenson located at Pittsburg in 1794, migrating from Carlisle. He served at Brandywine and Valley Forge, and after the war practiced in Carlisle. He was elected chief burgess of Pittsburg in 1801, and was one of the original directors of the University of Western Pennsylvania in 1819. He went east in 1825 and died in Wilmington, Del., in 1829, leaving two sons, Dr. Henry Stevenson, of the United States army, and Dr. P. C. Stevenson, of Carlisle.

Dr. Felix Brunot was a French Huguenot, born in 1752, came to America with his foster-brother, the Marquis de Lafayette, and was one of the army medical corps during the entire Revolution. He went to Pittsburg from Philadelphia in 1797 and lived on what has since been known as Brunot's island, in the Ohio river. He was very successful, and is said to have been the first physician to use electricity in his practice. He died May 23, 1838.

Dr. Andrew Richardson was settled in Pittsburg before 1798 and was prominent in both professional and public affairs. Dr. James Francis was the first physician in Connellsville and the northern section of Fayette county, settling there some time previous to 1787. Dr. Benjamin Stevens settled on a farm in North Union township, Fayette county, in 1789, and died, full of honor, in 1813. Among his students were Drs. Benjamin Dorsey, Daniel Sturgeon, Dr. Wilson, and Dr. Wright. Daniel Sturgeon was a graduate of Jefferson College and succeeded to the practice of Dr. Stevens. His son, Dr. William H. Sturgeon, afterwards practiced in Uniontown. Dr. Henry Chapese was a physician and druggist, the two occupations being frequently combined in early times, and practiced in Uniontown from 1790 to 1800. He advertised "a new recruit of Patent and other medicines," and a snake bite remedy, "15 drops of which, externally and internally, is an immediate cure."

Dr. Young was another early physician of Fayette county, and also kept a stock of drugs for the public. Dr. Jesse Pennel practiced for a period in Bridgeport, Fayette county, but died in 1819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No.

Die Northampton Bank, Verſpricht
an oder Vorzeiger auf verlangen Zehn Thaler
zu bezahlen. Northampton, Lecha County Penn.ª 1836

Caſſirer Preſident

A Pennsylvania German Bank Note

Reproduced especially for this work from an original in the collection of J. F. Sachse

of typhoid fever, which was then epidemic in that county. Dr. Adam Simonson came on from the east before 1795 and practiced in Uniontown until his death in 1808, respected and loved by the community.

Passing into Washington county, it is found that Dr. Absalom Baird, who studied with Dr. Gardner Scott of Chester county, who raised a company of volunteers for the Revolutionary army, of which Dr. Baird became a member, was soon afterwards appointed assistant surgeon in a Pennsylvania regiment. Towards the close of the war he began practice in Kennett Square, Chester county, and in 1786 removed to Washington, Pa., where he was killed by falling from his horse in 1805. Dr. Jacob Green was a physician in Springhill township, Washington county, but little is known of him except that his name appears on the tax roll of 1786.

Dr. Hugh Thompson was an early settler in Peters township, Washington county, where he was a large land owner and long in practice. Dr. Alexander Gaston practiced in Canton township, Washington county, many years, and removed to Ohio in 1792. Dr. John Culbertson settled in Washington, Pa., in 1794, but soon removed to Independence township and practiced successfully more than thirty years. Dr. William Bachly came from the east about 1794 and located on his farm near what is now Lindley's Mills Station, Washington county. He removed to Ohio after about fifteen years. Dr. Henry W. Blachly, a native of Paterson, N. J., visited Pittsburg, whence he started for New Orleans, but was led to return on account of yellow fever in the southern city. After many interesting adventures he heard of a Dr. Blachly living in the country, and upon visiting him found he was a distant relative. Dr. Henry Blachly settled in Morris township, Washington county, where he had an extensive practice during forty years. He left four sons and two sons-in-law in the medical profession, one of whom succeeded him, Dr. Stephen L. Blachly, who is still living.

Dr. Samuel McFadden settled in Philadelphia in 1795, whence he migrated to West Middletown, Washington county, and was in practice some years. Dr. John Julius Le Moyne de Villers, a native of Paris, France, settled in Washington, Pa., removing from Gallipolis, Ohio, about 1797. He was a superior scholar and possessed of fine natural qualifications. He died in 1849, leaving an only son, Francis Julius Le Moyne, born in Washington in 1798, graduated at Washington College in the class of 1815, studied medicine in Philadelphia and attained high eminence. He gave Washington and Jefferson College about $40,000, erected the first crematory in America and earnestly advocated that method of disposing of our dead. He died at Washington, Pa., October 14, 1879, leaving his son, Dr. Frank LeMoyne, now a prominent Pittsburg surgeon.

Dr. David Wishart, a native of Scotland, settled first in Huntingdon and next in Bedford county, where his son John, born in Scotland, studied medicine and graduated in 1808 in Philadelphia. He at once opened an office in Washington, Pa., and soon rose to eminence both as a physician and as a surgeon. The number of his descendants is large and conspicuous for ability. His son, Dr. John W. Wishart, graduated from the University of Pennsylvania and entered the army as surgeon, settling afterwards in Pittsburg, where he still resides.

Rev. Dr. Joseph Doddridge had a distinguished career. He was a native of Bedford county and was taken by his parents to Washington county, near the West Virginia line, in 1773. After a few years' labor as a Methodist preacher, the care of the home farm fell upon him on account of the death of his father in 1791. With his brother Philip, he worked the farm and studied every leisure moment, finally entering Jefferson academy. His medical studies were completed under Dr. Rush in Philadelphia. Having been admitted to the order of deacon by Bishop White in Philadelphia, he afterwards was obliged to combine his medical and clerical work to obtain a livelihood. He was a thorough student, rising customarily at four o'clock in the morning to pursue his studies, with his religious devotions. The whole country is indebted to him for his book, "Doddridge's Notes." He was in every sense a good man and a benefactor of his kind. He died November 9, 1826, reaching only his fifty-seventh year.

Old Court House, Philadelphia

Erected 1707; demolished 1837. From an old print

Another Washington county physician who was also a theologian was Rev. Cephas Dodd, who studied the latter profession under Rev. John McMillan, D. D., founder of Jefferson College. He settled in Amwell township, and at the suggestion of his friend, Dr. Henry Blachly, took up the study of medicine, but with no intention of following that profession. This he was, however, induced to do by his friends and he finally obtained a very large practice. He lived to seventy-nine years of age, and left a son, Dr. Thaddeus Dodd, and a grandson, Dr. W. S. Dodd, of Washington, Pa.

Westmoreland county had a prominent physician before the year 1800, who was also a much-loved minister of the gospel. This was Dr. Jacob Jennings, who practiced medicine in New Jersey until he was licensed to preach, when he moved to Westmoreland county. There he combined his two professions from 1792 until 1811. His death took place February 7, 1813. His son, Dr. Ebenezer Jennings, settled near Burgettstown, Washington county, and became somewhat famous for his early practice and advocacy of vaccination. He died at thirty-three years of age in 1808.

Dr. John Postlethwaite was born in Carlisle in 1776 and graduated from the College and University of Pennsylvania. Having traveled westward with the expedition sent to curb the whiskey insurrection, and being delighted with the region, he crossed the mountains after his medical education was finished in 1797 and located at Greensburg, where he successfully practiced until his death in 1842.

Dr. John Culbertson Wallace was the first resident physician at Erie. He was a native of Harrisburg and graduated in medicine at the University of Pennsylvania. In 1796 he accompanied General Wayne in an expedition to Fort Fayette, Pittsburg, as surgeon. He afterwards practiced his profession three years in Franklin, and thence moved to Erie. He rose to prominence, commanded an Erie county regiment at the beginning of the war of 1812, and died in 1827, leaving no family.

These brief notes of the early physicians of western Pennsylvania are closed by reference to the first physicians of Venango county, who settled previous to 1800.[1] Dr. T. G. Symonds settled in Franklin in 1800. Nothing is now known of his subsequent career. For sometime the county was without a physician, after which period Dr. Thomas Smith settled in the county and was successful in treating the sick of that immediate region.

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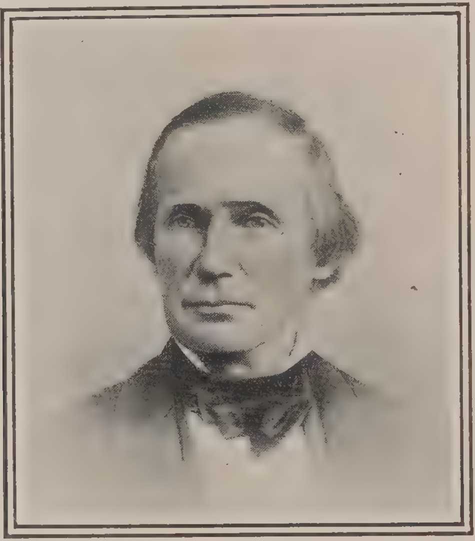
[1] The preparation of these notes was made possible only through the laborious researches of Dr. T. D. Davis, of Pittsburg, the results of which are embodied in an address delivered by him before the Medical Society of the State of Pennsylvania, at its fifty-first meeting, held in Philadelphia, September 24, 1901.

Detailed mention of the very many eminent physicians of western Pennsylvania who have honored their profession and relieved pain and suffering during the past century it is impossible and to a degree unnecessary to make here. The story of their lives is well known and may be found in the many medical records and literary works of the period.

Besides these personal factors in medical progress, Pittsburg has, with its material attainment, seen the establishment of important benevolent and educational institutions. The recent rich endowment of the Carnegie institute may be expected to contribute much to the intellectual advance of Western Pennsylvania, but it was long preceded by the Western University of Pennsylvania, which was erected in 1819, on the foundation of the Pittsburg academy, incorporated in 1787, and had more than nine hundred students in 1901. Charitable work and medical education are fostered by two large hospitals—Mercy hospital, opened in 1847, and the Western Pennsylvania hospital, opened in 1853, while a thriving medical school, begun as the Western Pennsylvania Medical college, articles of incorporation being filed June 30, 1883, was made the medical department of the Western University of Pennsylvania June 1, 1892. To this was added in 1896 the department of pharmacy by absorption of the Pittsburg College of Pharmacy, incorporated September 23, 1878, and a dental department, by an agreement made with the Pittsburg Dental college, incorporated April 16 of the same year. In this university and in the hospitals of Pittsburg there are to-day some of the best exemplars of medical and surgical science, while Pittsburg has furnished a medical journal long without a peer in adherence to the highest principles of medical ethics—once the Pittsburg Medical Journal; then the Pittsburg Medical Review, and now the Pennsylvania Medical Journal ,the official organ of the medical society of Pennsylvania.

Outside of these two principal cities of Pennsylvania there have been so many men of ability and great usefulness that it would be impossible to name more than a few of them. Northampton county contains that interesting section of the State probably best known in connection with the Moravian settlements, with their singular customs and their simple piety, whose gentle course of life was so rudely disturbed, when, in December, 1776, by order of General Washington, the buildings of the society were used to house the sick and wounded of the continental army, among them being La Fayette and Pulaski. Here, in 1750, flourished a surgeon from Germany named J. M. Otto, and about the



Joseph Buffington

Member of Congress 1843-1846; appointed chief justice of Utah 1852; judge of courts of Armstrong County, 1855-1871. Reproduced for this work from an engraving in possession of Joseph Buffington, United States district judge, Pittsburgh same time a celebrated "quack," who called himself "Dr. Green," and who had for a patient at one time no less a person than Jerome Bonaparte. Here, too, in 1822, Dr. G. H. Bute first planted the seeds of homoeopathy and here the first institution in this country for teaching that method of practice was established. Here, too, flourished Traill Green, well deserving the honors paid to him and the love which crowned his life. Born May 25, 1813, in Easton and graduated at the University of Pennsylvania in 1835, he became not only a practitioner of great usefulness, but also a teacher of great distinction, and for long was easily the leader of the profession in his section of the State—in person and in character a truly great man. Equally great was John Light Atlee, born 1799 and living until 1885, during this whole time exercising his profession in Lancaster county. He had no hospital appointment, but without this had a very extensive practice in medicine and surgery. In the latter he was especially distinguished by the fact that he contributed more than any other man, except perhaps his brother, Washington Lemuel Atlee, to the establishment of the operation of ovariotomy on a firm and scientific basis, in spite of the bitterest opposition of men ranking high in the medical profession in this country and in Europe. Another man may be mentioned as the type of that very large host of modest, faithful men, who in country districts are the friends and helpers of their fellows from the cradle to the grave, of whom so beautiful a type has been presented by Ian Maclaren in describing old Dr. Maclure. Such an one was he whom a generation now past the half century mark knew as old Hiram Corson, of Plymouth Meeting, whose long life of ninety-two years ended March 4, 1896, during the professional part of which it is said that he paid 400,000 professional visits. He was a man of striking personality and of strong individuality; in the discharge of his duty he was deterred by neither cold nor tempest, and his courage never failed him in the opposition he met from his fellows in the profession, of which he was one of the first to advocate the education of women for the office of physician, or the appointment of women physicians to have charge of those of their own sex restrained in hospitals for the insane. Both these projects he lived to see successful. Such men, unheralded outside of their immediate neighborhood, and practically unknown to the great world, have always been found, and will always be found in every part of this great State exercising their noble calling with fidelity and earnestness and serving their fellowmen.

The earliest interest in the teaching of pharmacy was shown when, in the College of Philadelphia, this was mentioned as part of the regular course of instruction given by Dr. Morgan and Dr. Shippen at the beginning of the medical school. This was, however, only such pharmacy as was likely to be useful to physicians; it was not until 1821 that steps were taken to furnish druggists something beyond their apprenticeship in this art. At that time the University of Pennsylvania conferred upon sixteen men, who were themselves practical pharmacists, considered to be of such conspicuous ability as to deserve distinction—the first to receive any such degree in North America—the degree of "Master of Pharmacy." At the same time the trustees ordered that this degree should hereafter be given only to persons who had served an apprenticeship of three years and were certified as fit by the professors of chemistry and of materia medica and pharmacy of the university. This appears, however, to have been the end of the project; for in the same year the druggists themselves came forward and undertook the work of educating those who were to pursue their craft. At a meeting in "Carpenter's Hall," March 30, 1822, the movement was organized, and soon afterwards the "Philadelphia College of Pharmacy"—now the largest institution in the world devoted solely to the education of pharmacists—was chartered. From this school the first class was graduated in 1826. Its present home is in a well appointed building on Tenth street, near Cherry, which contains every appliance needed by its large and able faculty. The reputation of this institution is world wide, and it has granted the degree of graduate in pharmacy and—since 1895—of doctor of pharmacy, to nearly five thousand persons. In addition to this special institution there is a department of pharmacy connected with the Medico-Chirurgical college, established in 1898, and one connected with the Temple college, in Philadelphia, opened in 1901.

Pennsylvania has secured great distinction by the part it has taken in elevating the practice of dentistry from a rather mechanical occupation to a specialty in medicine. In this the United States has done more than any other nation, and Pennsylvania has done more than any other State. A dental college in Baltimore was chartered in 1839, and another in Cincinnati in 1845, while the first such school in Pennsylvania was the Philadelphia College of Dental Surgery, chartered in 1850 and opened in 1852. In 1856, after graduating sixty-three students, the institution was abandoned and its rooms were taken possession of by a new school, destined to survive and attain great success. This was the Pennsylvania College of Dental Surgery, which, after occupying different buildings, now has one of the most complete sort at the northeast corner of Eleventh and Clinton streets, in Philadelphia. Up to the year 1900 it had graduated over two thousand men and nearly one hundred women as dentists. The third school for dentists established in Pennsylvania, was the Philadelphia Dental college, chartered in 1863, and now occupying a well-appointed building at Eighteenth and Buttonwood streets, where a special feature is made of instruction in what is called "oral surgery." More than two thousand graduates have left this college to extend its usefulness and reputation.

The fourth school for dentists in Pennsylvania was that established as a department in the University of Pennsylvania in 1878, when a number of the professors in the Pennsylvania College of Dental Surgery left it to take chairs in the university. This department is now the largest school for dentists in the State or country, and enjoys a reputation equal with the university.

The fifth school of this sort was that organized in Pittsburg in 1895 and associated by articles of agreement with the Western University of Pennsylvania in 1896, as its "Dental Department."

The sixth school for dentists was that established as a department of the Medico-Chirurgical college in Philadelphia, in 1897, upon the termination of the association between it and the Philadelphia Dental college.

HOMOEOPATHY

Homoeopathy sprang into life something more than a century ago, and thereby subjected the medical world to another of the convulsions which have characterized medical history since the earliest ages. The new school discarded the settled rules of practice and asserted its claim to the world. Its distinguishing characteristics, then as now, consist in the scientific employment of medicaments according to the principles denoted by the name *"similia similibus curantur,"* or "like is cured by like."

The principle first rendered into practical science by Hahnemann, the founder of the homoeopathic school, dates far back of his time, and is said to have been glanced at by Hippocrates; but it remained for the great Hahnemann to propound the startling dogma in 1790, while engaged in translating Cullen's Materia Medica from English into German. The new school passed through many wonderful and prolonged tests, trials and oppositions, and eventually was legalized in Bohemia in 1821; America in 1825; Russia in 1833; Austria in 1837; Prussia in 1843; England in 1858, and to-day is a recognized medical power throughout the civilized world.

The doctrines of homoeopathy were first introduced into the United States in 1825 by Dr. Gram, who settled in New York city in that year and began practice. He soon gained an enviable standing with the people, and that he attracted the attention of medical men is evidenced in the fact that many of his earliest followers came from the ranks of the "regular" medical profession.

Pennsylvania was the second State to accept the new school and the first in which was established an organization of homoeopathic physicians, formed in Philadelphia in 1833, and including both licensed practitioners and laymen.

The honor—it can be called nothing less—of having been the pioneer of homoeopathy in Pennsylvania, may fairly be accorded to either of several once well-known practitioners of that school, as their work was practically contemporaneous and each enjoyed more than ordinary prominence during the period of his active life. In 1828 Drs. William Wesselhoeft and Henry Detwiller were old-school physicians, the former practicing at Bath, and the latter at Hellertown, both in this State. At the suggestion of Dr. Wesselhoeft, Dr. Detwiller and he began the study of the homoeopathic system of treatment as laid down in text-books with which they had been supplied, and accompanied their researches with the practical use of a box of homoeopathic medicines sent

Zion Lutheran Church, Harrisburg

Built 1839. In this building William Henry Harrison was nominated for president and John Tyler for vice-president of the United States. By courtesy of B. M. Nead.

from Germany by Dr. Stapf and the father of Dr. Wesselhoeft. The results accomplished through their investigations proved entirely satisfactory, and on July 24 of that year Dr. Detwiller administered "the first homoeopathic dose in Pennsylvania."

This was the real beginning of homoeopathy in this State, and Dr. Henry Detwiller was its pioneer, while other reputable men, many of them old-school practitioners, were his cotemporaries and co-workers. In 1836 he visited Europe and still further pursued his investigations, but in the meantime the new school had gained a sure foothold in this country and particularly in New York and Pennsylvania. Many young students who had contemplated entering the profession and practicing as "allopaths" were led to change their course and enter the ranks of homoeopathy, while the acquisition of new champions from among the "regulars" were counted by scores; and once begun the movement was so rapidly extended that within the next quarter century every settled locality in the State had its homoeopathic physician in active and successful practice.

As previously stated, the new school of medicine was planted in Pennsylvania soil in 1828, and there it has ever since grown and flourished and yielded an abundance of good fruit. It first took root in Northampton county, when Drs. Wesselhoeft and Detwiller began their studies of its principles and who were its earliest exponents. After them came Drs. Pulte, Bute and Jacobson, each of whom may be recalled among the early homoeopathists of that region. In Philadelphia Dr. Carl Ihm began practice in 1829, and two years later Dr. George H. Bute succeeded him. The latter was for many years one of the leading physicians of his school in the State, and by his investigations contributed largely to the popularity of homoeopathy throughout the country, while his work in proving many plants for medicinal uses gave him wide fame in the literature of his profession. Dr. Charles F. Matlack is said to have employed homoeopathic methods of treatment in Philadelphia in the winter of 1832-33, and the claim is made for him that he was the first American representative of his school of practice.

The next accession to the homoeopathic school in Philadelphia was the arrival in the city of Dr. Constantin Hering, a native of Oschatz, Saxony, a scholar, naturalist and botanist, and who while engaged in the study of medicine under "regular" teachings, was asked to write and publish a work in condemnation of the principles of homoeopathy. To this end he prepared himself, and while investigating the alleged fallacies of the Hahnemannian theory, he became convinced of its efficacy and value, a thorough convert to its principles, and in his graduation thesis—"De Medicina Futura"—he warmly espoused and resolutely championed the new school both in its theory and practice. Having received his degree of M. D., he sailed for South America to make researches and collections in zoology (this under the patronage of the Saxon king) and while thus employed he completed his homoeopathic studies, and practiced under its principles in those parts for some time. This departure was soon brought to the attention of his sovereign, who admonished the young homoeopath that he should attend to his appointed duties and to "let outside matters alone."

Immediately upon receipt of the letter from his king Dr. Hering resigned his official position and began the practice of medicine in Paramaribo, but after a few years there he sailed for home, and on his way landed in Philadelphia in January, 1833, and with his arrival homoeopathy in Pennsylvania and in the United States acquired new life and strength, for Dr. Hering proved to be its ablest and foremost champion, its best exemplar, and one of its most worthy exponents and representatives both in active practice and in the establishment of its institutions. Indeed, for many years he was the acknowledged head of the profession under the Hahnemannian theory, its shield and buckler, its mainstay and support. A proper tribute to his life and his life work belongs to a volume rather than a brief page sketch; but in later paragraphs the reader will discover how Dr. Hering was an important part of homoeopathy—indeed was almost homoeopathy itself—throughout the period of his long, useful career.

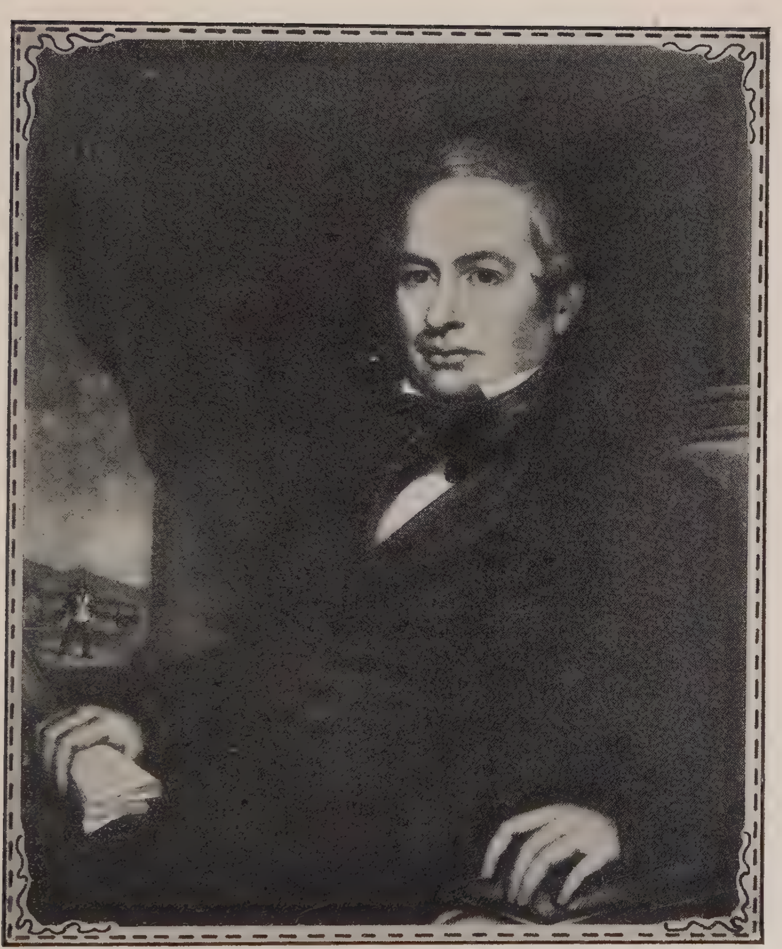
Among the other early homoeopathic physicians (the list may be regarded complete) who lived and practiced in Philadelphia previous to 1840, were Drs. Jacob Jeanes, Jacob Lentz, Samuel Freedley, Caleb B. Matthews, G. S. F. Pfeiffer, Walter Williamson, Richard Gardiner, Jonas Green, James Kitchen, Gideon Humphreys, Charles Neidhard, George Lingen, J. G. Rosenstein, William Schmœle, Henry Schmœle, H. F. H. Hoffendahl, Samuel R. Dubs, Alvin E. Small, Matthew Anderson, Frederick Schaeffer, and Dr. Aromada.

The new school found its way into Armstrong and Tioga counties in 1832. In the first named county Dr. Edward Mansa was the pioneer, and in the latter Dr. Lewis Säynisch is accorded the same honor. In 1834 Lebanon county was first invaded with the new principles when J. C. Risner ministered homoeopathically to the physical wants of the people. After him came Drs. Becker, 1835; Reinhold and Haessler, 1836; Jacob Bower, 1838; and others of later date.

In Chester and Cumberland counties homoeopathy found a lodgment in 1835. In that year Dr. Caspari began practice in what is now West Grove, Chester county, while in Carlisle, Cumberland county, Dr. Francis Ehrmann was pioneer of the new school.

In Delaware county Dr. Walter Williamson practiced homoeopathy in 1836, and three years later Dr. M. B. Roche settled at Darby. Drs. Alvin E. Small, James E. Grass, Stacey Jones and Charles V. Dare (the first homoeopath in Chester) also were early practitioners in the county.

In Alleghany county the seed was sown in 1837, and from the beginning a bountiful harvest in good results has rewarded the endeavors of the professional toilers. Dr. Gustavus Richhelm, a graduate of the University of Halle, Germany, a protégé of Drs. Hering and Wesselhoeft, took up his abode in Pittsburg in 1837



Joseph Ritner

Member Legislature 1820-1827; governor 1835-1839; one of the originators of the school system; anti-Mason, anti-slavery and temperance advocate

and began the good work—sometimes in the nature of missionary work—of treating the sick according to strict homoeopathic teachings; and he continued his practice in that city and its vicinity until 1853, when he removed to Philadelphia. Dr. C. Bayer located in Alleghany City in 1841 or '42, and was one of the founders of the Homoeopathic Medical society of Alleghany county; Dr. D. M. Dake settled in Pittsburg in 1846, having previously practiced elsewhere as an "old-school" physician. Dr. Marcellin Coté, also a convert, settled in the same city in 1847. In the subsequent long list of early homoeopaths in the county there is found the names of Drs. Charles Hoffman, 1848; H. H. Hoffman, 1849; William Penniman, 1849 or '50; J. P. Dake, 1851; J. F. Cooper, 1853; Frederick Taudte, 1853; F. R. Moore, 1853; J. A. Blanchard, 1854; J. C. Burgher, 1854; James A. Herron, 1856; F. W. Skiles, 1857; William J. Church, 1858; J. S. Rankin, 1858; F. B. Cooper, 1859; George S. Foster, 1859. If continued to the close of the nineteenth century the list of Alleghany county homoeopathic physicians would include the names of hundreds of men and women.

Into Berks, Juniata and Union counties homoeopathy made its onward march in 1838. In Berks Dr. Adolph Lippe was the pioneer, but after a year or two he left Reading and was succeeded by Dr. Moore, who remained about the same length of time. Then, in order, came Drs. Caspari, 1843, John H. Behne, 1845; G. R. Starkey, 1852, who established homoeopathy among the English-speaking people of that distinctively German city; Dr. R. Sargent; B. R. Pratt, 1858; E. H. Spooner, David L. Dreibelbis and still others. About 1838 or '40 Dr. Robert May took up homoeopathy and lectured and practiced through Chester and Berks counties. For many years he was the only physician of his school in the former county, or between Reading and Philadelphia. In Juniata county Dr. C. G. Reinhold was the pioneer, and in Union county the same honor belongs to Dr. Ignatius Brugger, he having formerly practiced under the old school, but was converted to the new under the teachings of Dr. Detwiller. Dr. Dornburg practiced in Mifflinburg from 1844 to 1848, and Dr. Joseph F. Harvey practiced in Lewisburg, beginning in 1856.

Bucks and Dauphin counties were first visited by physicians of the homoeopathic school in 1839, Dr. S. R. Dubs being the pioneer in the former and Dr. Ehrmann in the latter. Rev. Christian J. Becker is credited with having administered homoeopathic medicine in Dauphin county as early as 1839. Dr. Whitehead also was early in the field in Dauphin, and has been regarded as one of its pioneers in practice.

Mifflin, Montgomery and Crawford counties were given the opportunities of homoeopathic treatment in 1840. Dr. C. G. Reinhold settled in Lewistown in that year, Dr. George H. Cox in 1867, and Dr. Speth in 1869. Dr. Wauke settled in the north part of Montgomery county in 1840, and Dr. Ezra Fell located in Norristown two years later. Dr. Thomas Pierce followed in 1848 or '49. Dr. Alexander H. Burrett introduced homoeopathy into Crawford county, and practiced at Guy's Mills and at Conneautville for several years, being succeeded by Dr. W. F. Owen. Dr. H. M. Loger began practice at Linesville about 1863.

Schuylkill and Bradford counties received the ministrations of homoeopathic physicians in 1841, in the former Dr. Adolph Lippe having been the pioneer, and in the latter Dr. Ezekiel Lovejoy. Dr. Lippe located at Pottsville, and after him came Drs. C. Haeseler, Benjamin Becker, Francis Boyer, Henry Haeseler and still others of more recent date. In Bradford county, besides Dr. Lovejoy, the older homoeopaths were Drs. Leonard Pratt, David S. Pratt and L. G. Bradford.

Over in the West Branch valley in Lycoming county homoeopathy was first introduced by Dr. John R. Coxe, who settled in Williamsport in 1845. Dr. Reinhold came in 1864, Dr. M. J. Koenig in 1865, and the afterward noted Dr. W. C. Doane in 1868. In Lancaster county Dr. Ehrman began the good work about 1847, locating at the county seat, and was followed in 1851 by Dr. J. Mairs McAllister. Erie and Lawrence counties were first visited in 1848, Dr. S. Marvin first representing the profession in the former, and Dr. Samuel Searles and David C. Porter in the latter county. In Erie county the other old-time homoeopaths were Drs. P. Faulkner, R. Faulkner, both former old school physicians; Dr. W. J. Blakely and Dr. Anson Parsons. Dr. Newell White was an old homoeopathic practitioner in New Castle, and a convert from the allopathic school.

The Cloister, Snow Hill

The last home of the Seventh Day Baptist Communists. Engraved especially for this work from a negative by W. H. Richardson

The records of homoeopathy show that in 1849 the disciples of the Hahnemannian theory found their way into four other important localities of the State—Wayne, Adams, Centre and Franklin counties. In Wayne Dr. Edwin West was the pioneer. In Adams Dr. J. H. Marden, who also was a clergyman, began practice in that region. In Centre Dr. C. G. Reinhold located in Boalsburg, his practice during his long service having given him at least a temporary residence in the counties of Huntington, Perry, Montour, Union, Northumberland and Centre. Dr. Ehrman, to whom frequent reference has been made, gave the first homoeopathic treatment in Franklin county several years earlier than 1849, but in that year Dr. P. R. Schucking located in Chambersburg, remaining until 1851.

Dr. A. P. Gardiner located at Carbondale, in Luzerne county, in 1851, and removed to Scranton in 1855, hence was the pioneer of homoeopathy in two now important cities in the State. Dr. J. S. Pfouts began practice in Wilkes-Barre in 1861, and Dr. C. A. Stevens in Scranton in 1862. At that time Scranton was a part of Luzerne county.

Dr. Thomas Bryan introduced homoeopathy in Beaver county in 1853, having for more than twenty-five years practiced allopathy. Other old-time homoeopaths in this county were Drs. J. D. McCreary and T. A. Shane.

According to reliable authority, homoeopathy was introduced into Butler county about 1854, through the kind offices of a clergyman of the Catholic church, who had studied its principles and learned its rational methods of treatment. About the same time Dr. Myers practiced in Butler a short time. Dr. I. Stewart, a converted eclectic, began practice about 1855, and was succeeded in 1865 by Dr. R. C. McClelland.

Montour, Blair, Carbon and Columbia counties were brought within the rapidly spreading teachings and influences of homoeopathy in 1855. Four years later, 1859, Clinton county was provided for, and in 1860 the pioneer homoeopath found a firm foothold in Perry county. In 1864 Northumberland county was laid under the beneficial siege, and in the following year Susquehanna and Mercer counties were brought under homoeopathic subjection.

In the manner indicated in preceding paragraphs the beneficent work of introducing the theories of medicine evolved by the famous Hahnemann were subsequently carried into the remotest localities of the State, and now, at the beginning of the twentieth century, the entire people of the Commonwealth are daily and hourly receiving its benefits at the hands of skilled and schooled physicians and surgeons. During the first twenty-five years after Dr. Detwiller administered the first homoeopathic "dose" a large proportion of the practitioners under the new school were converts from the ranks of the "regular" medical profession, and by the latter the departure from "established principles" was regarded as a species of fanaticism, and the exponents of homoeopathy were ridiculed and often were sought to be socially ostracised; yet throughout all that period the work was steadily advanced until the people of the great body politic of the State were themseves educated to an understanding of its aims and purposes. Then came a change of public sentiment, and with it the work of persecution ceased and even the more radical of the old-school champions began to yield some consideration in favor of the new. The old prejudices are not entirely wiped out even with the enlightened ideas of the present day, yet in circles where honest, candid opinion holds sway homoeopathy stands upon the same elevated plane with the most honored professions in the world. It is not the fault of homoeopathists that they and their associations and institutions are known by a distinctive name, but rather the fault lies with those who have refused to allow the views denoted by that name to be advocated, tested and fully practiced within the bounds of ordinary professional fellowship. Grant to homoeopathy the same liberty which is accorded to all other ways of thought, however novel and unlike those ordinarily received, and the *raison d'être* of homoeopathic institutions will have entirely disappeared.

Institutions of Homoeopathy.—One of the most serious embarrassments against which the founders of the homoeopathic school in Pennsylvania were obliged to contend was the lack of an institution for the education of those who desired to fit themselves for professional life as physicians and surgeons. To provide for such an institution Drs. Wesselhoeft, Detwiller and their few pioneer associates early began devising means, but the end seemed almost impossible of attainment until 1833, when Dr. Constantin Hering became a part of homoeopathic life in the State.

Soon after Dr. Detwiller administered his first dose under strict homoeopathic principles, the few converts to the new school associated together for the purpose of mutual improvement and held weekly meetings at the house of Dr. Freytag in Bethlehem. This was the beginning of the movement which led to founding a homoeopathic school, although several years passed before that result was finally accomplished. In the late summer of 1834 the new-school physicians formed what then was known as the "Homoeopathic Society of Northampton and Adjacent Counties," the object of which was the advancement of homoeopathy among its members, and also mutual improvement and encouragement in the study of the Hahnemannian theory and practice. About this time Dr. Hering had become recognized as the central figure of homoeopathy in Pennsylvania, and naturally the leading members of the society sought his counsel and advice regarding the establishment of a school of instruction.

On December 30, 1834, a meeting was held at the Hering residence in Philadelphia, and on January 1, 1835, a plan was perfected for the establishment of the "North American Academy of the Homoeopathic Healing Art," an institution to be located at Allentown with Dr. Hering as its president and principal instructor. An incorporated company was organized, funds were raised and land was secured; and on April 10, 1835, the institution commonly referred to as "the Allentown Academy" was brought into existence, although on account of lack of money the main building was never erected. The institution was incorporated by an act of the legislature, passed June 17, 1836.

Notwithstanding the laudable object for which it was established and the zealous efforts put forth by its supporters and the splendid results accomplished during its existence, the acadamy proved to be a short-lived institution, and in 1843 its property was sold to satisfy mortgage creditors. The last meeting of its stockholders was held July 14 of the year mentioned.

After the downfall of the academy homoeopathy was without an educational institution in Pennsylvania for about five years. During that period there was much discussion in professional circles of the need of a medical college in Philadelphia, and at the meetings of the American Institute of Homoeopathy there was developed a strong sentiment in favor of such an institution. The outcome of this discussion was an informal meeting of leading practitioners, and a determination to establish a college in the city, which resulted in a charter from the legislature, granted April 8, 1848, incorporating the "Homoeopathic Medical College of Pennsylvania."

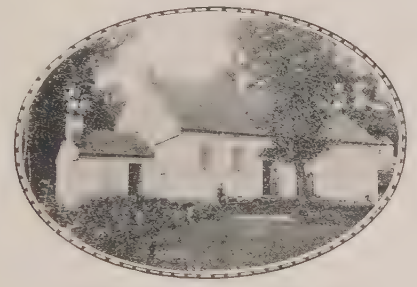
Having completed all preliminary arrangements, the new institution began its career October 16, 1848, in a building in the rear of Arch street, formerly the seat of operation of the Woman's Medical college. In the next year, however, the college quarters were removed to Filbert street, above Eleventh, and was located in the old Pennsylvania Medical college building, in which locality it was maintained throughout the period of its existence and until the consolidation—or merger—with the Hahnemann Medical college. Along about 1860 the corporation in control of the college management became involved in dissensions and the feelings then engendered were manifested on frequent occasions until 1865, when a new charter was obtained and a radical reorganization was effected. Again, after the end of the school session of 1866 and '67, there was a revival of the former troubles between the management and the faculty which was carried to such an extreme that Dr. Hering resigned and took immediate steps toward founding the Hahnemann Medical college. After his retirement a reorganizaiton was again effected, but to no material purpose so far as good results were concerned, and in 1869, under an act of the legislature, the Homoeopathic Medical college lost its identity and was merged in the new and greater institution.

In the summer of 1867 the medical men who with Dr. Hering had withdrawn from the old college secured the charter of the Washington Medical college of Philadelphia (under which no organization ever was effected) and made application to the court to change its name to Hahnemann Medical college of Philadelphia. This was done July 17, 1867, and by that action the new institution began its career in the upper part of a building on Chestnut street. In 1869, the Homoeopathic Medical college having fallen into a decline, the new management had no difficulty in effecting a consolidation of interests and succeeding to the occupancy of the old college building. On April 2, 1869, the legislature passed an act of consolidation by which the Homoeopathic Medical college passed out of existence and was superseded by the splendid institution which now honors Philadelphia with its presence, its influence and its excellent work. The present college building occupies a commanding site on Broad street (north), the grounds extending west from that thoroughfare to Fifteenth street. The college building itself was erected in 1885-6 and the hospital building in 1889-90.

The Penn Medical University, long out of existence, was incorporated under an act of the legislature in 1853, and while designed to furnish instruction in accordance with established homoeopathic principles, it taught old-school principles as well, and also was a co-educational institution in that its courses of instruction were open to both males and females. In addition to these distinctive features the university courses were graded; first the philosophical, second the physiological, third the pathological, and fourth the practical course. In this respect the Penn Medical university was the pioneer institution of its kind in the country.

At first the university occupied rooms at the corner of Ninth and Arch streets, and in the latter part of 1854 removed to Twelfth and Market; and in 1857 to Arch street (910), where it remained until the disturbing events of the war necessitated a suspension of operations at the close of the school year of 1863-64. During the period of its history the university graduated about one hundred and twenty-five physicians, of whom eighty were males and forty-five were females.

The formation of medical societies, so far at least as homoeopathy is concerned, had its beginning in Pennsylvania, and that within a very few years after the Hahnemannian doctrine had been accepted in the United States. On April 10, 1833, according to authenticated records, Drs. Ihm, Bute, Matlack, Hering and Wesselhoeft, with several "laymen," personal friends of Dr. Hering, formed the Hahnemannian society, the design of which was to disseminate the doctrines of homoeopathy and make known its advantages among the people. Five years later, 1838, the Homoeopathic Medical society of Philadelphia was organized and in membership only physicians were admitted.



Seventh Day Baptist Meeting House, Snow Hill

Still standing. Reproduced for this work from
a negative by W. H. Richardson

On April 10, 1844, the American Institute of Homoeopathy, a national organization, was formed in New York city, and two years later there was organized in Philadelphia an "association for the promotion of medical science," which was auxiliary to the national body, and which soon took the more formal name of "Philadelphia Branch of the American Institute of Homoeopathy." On

July 7, 1852, the Philadelphia Homoeopathic Medical society was formed and continued two years.

The Homoeopathic Medical Society of the State of Pennsylvania, the principal organization of homoeopathy in the Commonwealth, and to which all district and county societies are auxiliary, had its origin in a meeting of homoeopathic physicians held in Pittsburg, June 5, 1866. Since that time the society has maintained a continuous, healthful existence, and has ever been recognized as a powerful factor for good in professional circles. Although several district and county societies were organized previous to the formation of the State society, the creation of the latter had the effect to stimulate action in other localities, and now it may be said that even the remotest parts of the State are brought within the jurisdiction and influence of some of these minor orizations.

CHAPTER IV.

PENNSYLVANIA JOURNALISM

WHAT is now called journalism was practically unknown in this country at the beginning of the eighteenth century, and as Pennsylvania was the central colony in which the Colonial Congress met, in which the Declaration of Independence was framed and declared, in which the Constitution was framed, and in which the new government of the republic was administered during all of Washington's term as president, there was no opportunity for the development of journalism in any of the other colonies. Franklin founded the Pennsylvania Gazette in Philadelphia in 1728 and that may be accepted as the beginning of Pennsylvania journalism, but the weekly newspaper in which even the genius of Franklin was exhibited, could command little circulation because there were practically no mails to reach the people with regularity outside of the leading cities, and it is a notable fact that his annual almanac known as "Poor Richard's Almanac," became very much more widely known than his newspaper.

The work of journalism, however, has been going on indefinitely among all the civilizations of the world with the pamphleteer as the forerunner of the editor. Although there were a number of newspapers in Pennsylvania before the adoption of the Declaration of Independence, the great work of arousing the people to action in defense of their liberties was done by the pamphleteer. Pamphlets were then written in great abundance by the leading statesmen of the country, and slowly but surely reached even the remotest communities; and in the absence of newspapers and other reading matter, the pamphlet that reached a home, however humble, was carefully read and studied, and handed from man to man until the whole neighborhood would become interested in the subject and discuss it with the earnestness and honesty of conviction then so prevalent in all rural circles. Some of the ablest political productions in the history of the republic appeared in pamphlets written before the Revolution, during the Revolutionary war, and during the great struggle for the establishment of free government in the new world. The most impressive and persuasive pamphleteer of that day was Thomas Paine, whose convictions and sympathies were intensely enlisted in the cause of freedom, but he had as associates in his great work the most brilliant men of the age. It was then the only way to reach the people.

The newspaper of that day was very small, devoted largely to advertisements, and set in large type, and it could accommodate nothing more than the briefest presentation of the news of the week, but the pamphlet was always exhaustive on the subject it discussed, almost invariably from the pen of a master mind, and it was by that method that the people were reached in the course of weeks or months as they are now reached every day by the daily newspaper. Thus the journalism of Pennsylvania and the journalism of the country in the early days was practically the work of the pamphleteer, and without his offices it would have been impossible to unite the people of the colonies in the great work of emancipating themselves from the then oppressive yoke of Britain.

The work of the pamphleteer had become so important and so widely appreciated that it was continued even long after journalism had begun to reach every community. During the War of 1812, when newspapers were quite limited in circulation, the grave questions which arose in the administration of the government were elaborately discussed in the pamphlets of that day, and even as late as our Civil war a number of pamphlets were issued North and South which are preserved to-day as among the choicest political literature of that period. Horace Binney, then at the head of the Philadelphia bar and patriarchal in years, wrote one of the most important utterances of his life in support of the government in suspending the writ of habeas corpus, and many pamphlets appeared from men of the ripest experience in politics and statesmanship, which were well worth preserving to enable the student to understand fully the grave problems to be solved in our fraternal conflict.

The Civil war dated the development of progressive journalism throughout the country. There were very many able journals before that period, but a great war with nearly every family directly or indirectly interested in the army, called for a newspaper in nearly every home and enforced the increase of mail facilities to enable the newspapers to reach their patrons. Indeed, we date our wonderful progress in every line of advancement from our Civil war because its four years of conflict, with the colossal measures and movements necessitated by it, advanced the country half a century in a single decade, and when the newspaper once reached the home it was there to stay. The energy and enterprise developed by the journalism of that period could never be receded from, and journalism from that time until the present has been altogether in the line of advancement, until to-day the newspaper is the great educator of our eighty millions of people, and furnishes the news of the entire world in vastly multiplied pages at one-fifth the cost of the newspaper of the olden time.

The work of the pamphleteer prepared the people of the country for the newspaper, but it was not until nearly the middle of the nineteenth century that the penny newspaper became successful in all the leading cities. The New York Sun was made the paper of the people by the Beaches; the Public Ledger of Philadelphia was made a brilliant success by Swain, Abel and Simmons, as was the Baltimore Sun by the same people, and the Pittsburg Dispatch was the first of the successful penny dailies west of the

Alleghanies. These papers inaugurated the advertising system that has given millions of profits to modern journalism, and became the newspapers of the well-to-do people of the country. In those days there were public market houses on the streets of Philadelphia as in other cities, and the country people came to the various stalls in the market place on Wednesdays and Saturdays, and the penny newspaper, as journalism ever does, adapted itself to the conditions confronting it. The great days of the week for the Public Ledger were Wednesdays and Saturdays, when the business houses as a rule made their announcements in the advertising columns. It became such a fixed habit for Philadelphia merchants and business men to advertise on Wednesdays and Saturdays, that twenty-five years ago, when the market houses had disappeared and people came to market any day that suited them, the business men continued to insist upon Wednesdays and Saturdays for presenting their advertisements.

Hollidaysburg about 1840

From an old print

The penny journals of that day did a great work. They did not have telegraph dispatches, but they gave a brief summary of the news brought from Europe by every weekly steamer, gave all local events of special interest, and carefully avoided elaborate editorials. It was not an uncommon thing to see the penny paper of that day without a line of editorial in it, and only some most extraordinary occasion would bring out an editorial of half a column. They had Washington correspondents who became important factors in the presentation of political information, and it is certainly due to the penny journalism of that day to say that reliability was one of its chief attributes. The New York Herald was founded by Bennett as a penny newspaper; as was the Tribune by Greeley some ten years before the middle of the last century. They wanted to make success in journalism by a large circulation, and only a penny paper could reach the people, but they led the advance in cheap journalism by developing what might be called first-class papers of that day at the price of two cents. It was considered a very bold venture, as there seemed to be no middle ground then between the penny newspaper and the five-cent ponderous daily that was simply a luxury and confined to readers of liberal resources, but they achieved great success as two-cent journals, and when the Civil war came with paper quadrupled in cost and other expenses increased proportionately, the leading dailies of the country advanced to four cents. Thus penny journalism fallowed the field for the present universal success of American newspapers, which have advanced from the costly four-cent newspaper to a vastly greater supply of news and reading matter and many of them furnished to the public at a penny a copy with large profits for publishers. Half a century ago Philadelphia had one great penny newspaper, the Public Ledger, and three large blanket sheets published at five cents a copy, but to-day there is not a single morning or evening newspaper published in the city of Philadelphia at a higher price than one cent. per copy.

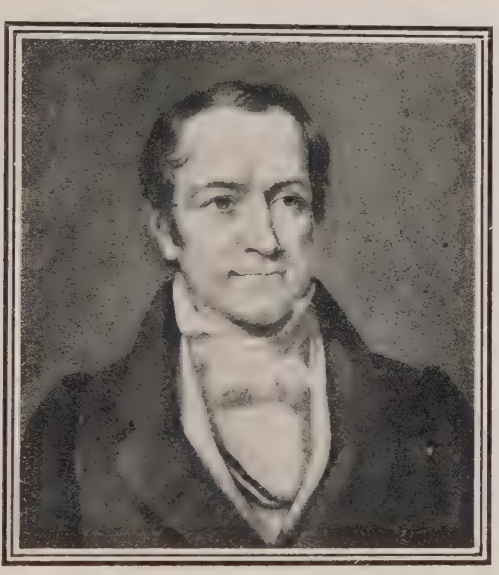
The penny journalism of the olden time that was the forerunner of the great journalism of to-day, as a rule made no effort whatever to mould public sentiment. They were simply newspapers in a very small way and distinguished for neutrality in politics and as a rule on all other questions on which there was serious diversity of conviction. The chief exception I can recall to the rule was given by the Public Ledger of Philadelphia during what is now known as the Native American riots of 1844, when churches and halls were burned and many persons killed on the streets in riotous conflicts. The Ledger took a firm stand for the maintenance of law and order, and denounced the rioters in the boldest terms. As it was the only paper read by the masses of the people it attracted very general attention, and aroused the riotous element to such a frenzy that the Ledger narrowly escaped an assault by the mob, but the mastery of the law was speedily asserted, and the Ledger thereafter occupied a very much more commanding position in the community than it ever did before.

The penny journals of the olden times could not reach into the country. Generally their circulation was confined to the cities in which they were published and to the surrounding counties. A very few of them would find their way into the larger towns twenty to fifty miles away, but in the village post-offices they were strangers. It was not uncommon in those days for one or two specially enterprising people in a rural town to take the penny newspaper, and if there was a business man or merchant who received country products to market in the city, he would receive one of the large commercial papers to keep himself advised of the condition of the markets and to protect himself from counterfeit or worthless money. In nearly every town of importance there was one such business man, and the people of the town and community expected him to give them all the information about the markets and money. The price of a commercial newspaper was not less than $8 a year, and only a man largely engaged in business could afford such an outlay.

The weekly newspaper gradually extended throughout the rural districts into every country town of importance, and in several of the earlier towns like Chambersburg and Erie and Harrisburg the weekly newspaper was an important political factor fully a century ago. I remember when publishing the Chambersburg Repository, in looking over an old file of the paper published near the close of the eighteenth century, I found an editorial apology for the failure to issue the Repository the previous week because the pack mules which brought the paper from Pittsburg had been storm-steaded in the Alleghanies. The weekly journalism of Pennsylvania that developed in the early part of the nineteenth century was the most potential journalism the State has ever known. This expression will startle thoughtless readers, but it is none the less entirely and absolutely true. Fifty years ago Pennsylvania had well established weekly newspapers in every leading county town of the State, and as a rule they were published and edited by men of commanding ability. They became very generally circulated throughout their respective counties, and many of them made liberal fortunes for their owners. It was a rare thing in those days to find more than one political paper of each party in a county town, and none in the smaller towns. Immense counties like Lancaster and Berks would have a more liberal supply, but the rule was one established Whig and one established Democratic paper in each county town, which were the oracles of their respective parties. Common schools had then done a reasonably good work, and paved the way for the weekly newspaper, and it was the first necessity of the weekly paper of that day to command the confidence and trust of its own party, and the respect of its political opponents.

When I recall the weekly editors of the decade between 1840 and 1850, and the immense influence exercised by them, not only in their respective counties, but in the direction of State politics, I recall the period in the history of journalism in Pennsylvania when the political newspaper was most omnipotent. The editors were, as a rule, strong writers and thoroughly familiar with the political movements of the day, and I could name of that period a half dozen newspapers of either party whose considerate expression on any public question of vital interest was vastly more potent in controlling the political action of the respective parties in the State, than a like expression would be from all the newspapers in Philadelphia to-day. The weekly newspaper was a political journal, and it was trusted by its party and the people who were its patrons. They did not then, as newspapers do now, simply present the conditions and then give their deductions in the editorial columns; but they spoke wholly from the editorial chair, and in those days the editorials of the respected weekly journals were first read by the great mass of their subscribers, while to-day the most brilliant editorials are regarded as secondary to the news, and many of the most intelligent of readers hastily skip over the news columns, and then lay the paper aside. The weekly newspaper of that day was not simply an educator as is the public journal of to-day. Its editor did the thinking for his people, and his deliverances were accepted as commands, while to-day the people read the news, form their own convictions, and are not generally guided by editorial instructions. The period of the weekly newspaper at the zenith of its power, as it was half a century ago, was the only period of our history in which the newspaper absolutely dominated political conviction and action. The two most conspicuous and potent of the weekly newspapers of that time were the Reading Adler and the Lancaster Volksfreund, one the German Democratic bible of Berks, and the other was the German Whig bible of Lancaster; and Bear's Lancaster German Almanac was equal in importance in the German homes of the Old Guard, to Franklin's Poor Richard's Almanac of the olden time.

The weekly newspaper is practically eliminated as a political factor in Pennsylvania. In a number of the smaller counties where daily papers cannot be sustained, it maintains some measure of its importance, but even there the daily newspaper from the leading cities is found, not only in all business and professional circles in the county towns, but also in the villages. The local weekly is taken simply because it is the only medium by which the people can obtain the news of their county and respective communities, but for general news and family literature they depend upon the city daily journal, that is now furnished them at a little more than the old time cost of the local weeklies. In the larger counties and county towns where the weekly newspaper was a most important political power half century ago, it is entirely superseded by the local daily, and in some instances the weekly is entirely abandoned for semi-weekly editions.



Walter Forward

Lawyer and editor; congressman 1823-1825; member State Constitutional Convention 1837; comptroller of the treasury 1841; secretary of the treasury 1841-1843. Photographed especially for this work from an engraving in possession of Mrs. William M. Darlington

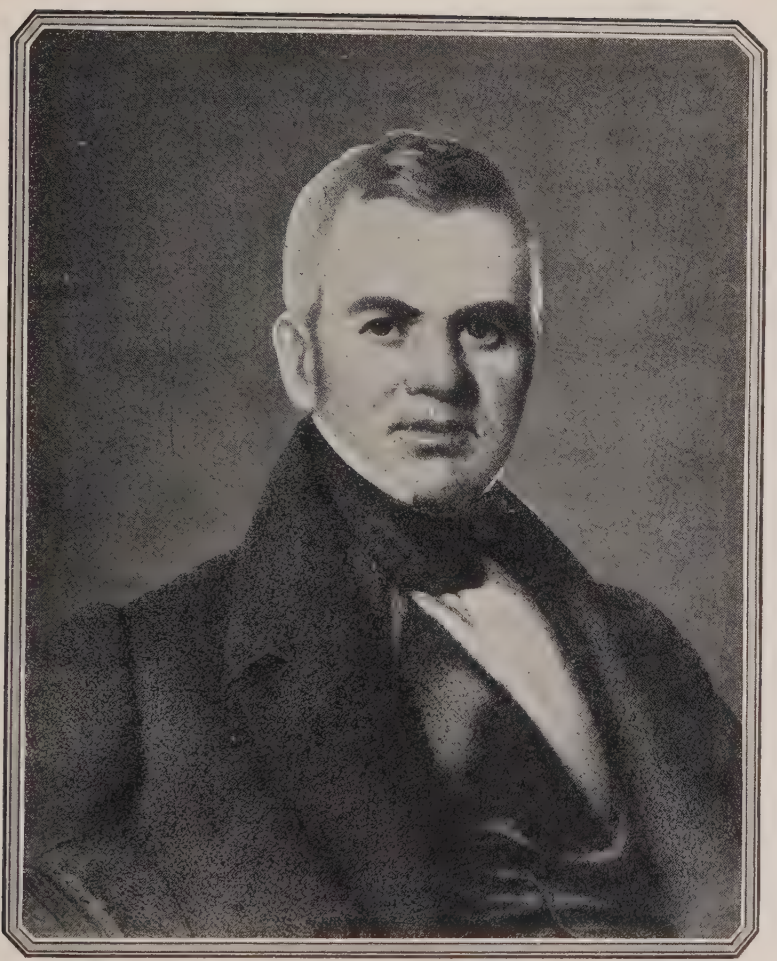
This growth of the daily newspaper in the leading inland towns of the State received a great impetus by the Civil war, and the inland daily has steadily grown until to-day there are in many of the inland cities daily newspapers quite as creditable in form and substance as were the leading city dailies fifty years ago. Most of the important inland dailies in Pennsylvania publish only evening editions, as in eastern Pennsylvania the Philadelphia dailies are delivered in all the inland towns to be read at the breakfast table with the local newspaper, and in the western counties the Pittsburg papers perform the same office; but the late editions of the leading evening journals of Philadelphia and Pittsburg cannot reach the inland towns until long after the same news can be published in the local evening papers. As a rule the inland dailies are not only prosperous, but they exert quite as much influence in political affairs as do the leading journals of the great cities, and I am not certain that they are not even more potential than their city rivals in shaping the political convictions of the State. There is hardly a neighborhood in Pennsylvania so remote that the daily mail does not reach it, and wherever there is a daily mail it is safe to assume that the daily newspaper has followed it. I think it fair to assume, taking the entire State, that a much greater percentage of people read daily newspapers to-day than read the weekly newspapers fifty years ago.

Half a century ago the leading cities had very successful weekly literary newspapers. The political dailies all had weeklies, but they did not command a great circulation in Pennsylvania for the reason that the local weekly newspaper was generally preferred. The literary newspaper of that day attained a very high measure of success. The Saturday Evening Post was one of the earliest of them, and was one of the most successful weeklies of the country for more than half a century. Nearly or quite all of its associates in Philadelphia perished long since, but the Post continued a lingering existence until it was finally rehabilitated by the Curtis Publishing Co., and made one of the successful literary weeklies of the country. There has been a steady drift away from weekly journalism during the last fifty years, and excepting those sustained by religious and sectarian interests, the weekly literary journal has largely given up its field to the cheap magazines. A very few have maintained successful careers, but the great diversity of literary publications now issued narrows the field for the literary weekly that flourished a generation ago.

The most successful political weekly in the history of American journalism was the New York Tribune in the zenith of Greeley's power as a political leader. It not only reached over a quarter of a million circulation, but it was the most potential publication this country has ever produced. The time was when an utterance from Horace Greeley in the weekly Tribune was vastly more important with the country than an utterance from the president of the United States, but the success of the weekly Tribune was suddenly ended by Greeley's changed political position in 1872, and to-day there is not a weekly issued by any of the great dailies of the country that could be quoted as an important factor in politics or a great success in journalism. The literary weekly has been supplanted by the magazine that now covers every phase of literature, science and art, and very much better magazines are published at ten cents per copy than the average magazines of fifty years ago at treble that cost.

Pennsylvania had its fair share of the great newspapers of half a century ago which shaped political conviction and action. The United States Gazette, edited and published by Joseph R. Chandler, the North American edited by McMichael and Bird, the Pennsylvanian edited by John W. Forney, and the Inquirer published by the Hardings and edited by Robert Morris, with the Pittsburg Journal edited by Mr. Riddle and the Pittsburg Gazette under the editorial direction of Deacon White, gave Pennsylvania public journals which ranked with Webb's Courier and Enquirer, Brooks's Express, Greeley's Tribune and Bennett's Herald of New York, the Post and the Atlas of Boston, Richie's Inquirer and Pleasant's Whig of Richmond, Prentice's Louisville Journal, Kendall's Picayune of New Orleans, Gales's Intelligencer and Blair's Globe of Washington. The great newspapers which directed public conviction and action fifty years ago had very limited circulation. They were almost invariably high in price, and necessarily accepted as a luxury only by the few who could afford it. Editorials in these leading journals were not regarded as necessary excepting when some special occasion called for editorial utterance, and they often appeared with only a limited number of editorial paragraphs, but their political leaders were written with the greatest care, and were always read by the leading men of the country with great respect and often with great deference. These journals did not reach the masses of the people, but they were read by the leaders of all parties, and thus by influencing the action of political leaders, largely controlled the convictions of the country. I remember when one of Gales's elaborate editorial leaders, polished and forceful as a Macaulay essay, arrested the attention of the whole country, and was as carefully studied by the president of the United States as he studied the convictions of his constitutional advisers.

In Pennsylvania the greatest of these journals of that class was the United States Gazette because of the singularly elegant and forceful editorials which came from the pen of Joseph R. Chandler. The wonderful progress of journalism can be well judged when I state the fact that Mr. Chandler told me some years before his death, that in the early days of his management of the Gazette he did all the editorial work on the paper himself without an assistant in any department, and at one time taught private classes to help his newspaper along. He ranked with Joseph Gales as one of the most polished and impressive editorial writers of the age. Like all the journalists of that class, he was very conservative, slow to advance, and the North American under the energetic direction of Morton McMichael became a very active competitor. It was the first daily journal in Philadelphia with an editorial staff that compared favorably with the staff of the best New York journals. With McMichael and Bird directly interested in the enterprise, with Judge Conrad and John M. Clayton as regular editorial contributors, it is not surprising that the North American speedily distanced the conservative United States Gazette, and the result was the speedy union of the two papers by McMichael purchasing Chandler's paper, Chandler retiring.



David Rittenhouse Porter

Iron manufacturer; stock raiser; member State Legislature, 1819; State senator, 1836; governor, 1839-1845

With the new opportunities and duties brought by the Civil war, the Inquirer was reduced to two cents and published in attractive quarto form, and during the war it led all the Philadelphia dailies in enterprise and circulation. Col. Forney retired from the Pennsylvanian before the election of Buchanan to the presidency in 1856, and his alienation from his old friend whom he had elected to the presidency by the most heroic political efforts in Pennsylvania, steadily widened after Buchanan's inauguration until 1857, when Forney finally and fully separated from Buchanan by establishing The Press to lead the opposition to the Kansas policy of the administration. The Press was established as a two-cent paper, and that had then become the standard price of the Philadelphia journals with the exception of the North American, which was continued as a large blanket sheet with its important commercial support at the old price of five cents per copy. Later it was lessened in form and the price reduced to three cents, and finally under the direction of Clayton McMichael it was reduced to a penny. The Bulletin, established originally by Alexander Cummings, was the first of the important evening papers to be reduced to two cents, and it finally joined the procession of penny journalism. The Evening Telegraph, established by Warburton and Harding, had a most successful career as a three-cent evening family newspaper, but young Warburton, who succeeded his father, has enlarged its pages and reduced it to a penny. The Inquirer was reorganized by the Elversons as a two-cent paper, but was speedily reduced to a penny. The Times was a very successful two-cent paper for ten years, and for fifteen years more as a penny paper, but it was finally merged with the Ledger, and the Ledger and the Press, the last of the two-cent papers, lately gave up the struggle and made the entire morning and evening newspapers of Philadelphia penny journals.

While the daily newspaper has advanced with marvellous strides in Pennsylvania during the last half century, and extended its circulation not only into every country town but into every community, and thus apparently lessened the necessity for the increase of local journals, the growth of local journals has been startling. There is hardly a village in the State approaching a thousand in population, that has not one or more local newspapers, and in the towns of the State outside of the county towns, there are now published fully five hundred weekly newspapers of various kinds, with here and there a daily added. The patronage and influence of these journals are almost exclusively limited to their respective local communities, but when it is remembered that they each circulate from five hundred up to two thousand copies, and probably have an average circulation of nearly or quite one thousand, we find these purely local weekly newspapers a very important factor in the education of our people. A very few take pause to consider that the little local weekly away from the county towns issues not less than five hundred thousand newspapers each week, all of which are carefully read in their respective neighborhoods. They are generally built up by some enterprising printer who starts his weekly paper in a thriving town, does most of the work himself, and gradually establishes a business upon which he can live comfortably and educate his family.

Ebensburg

From an old print issued about 1840

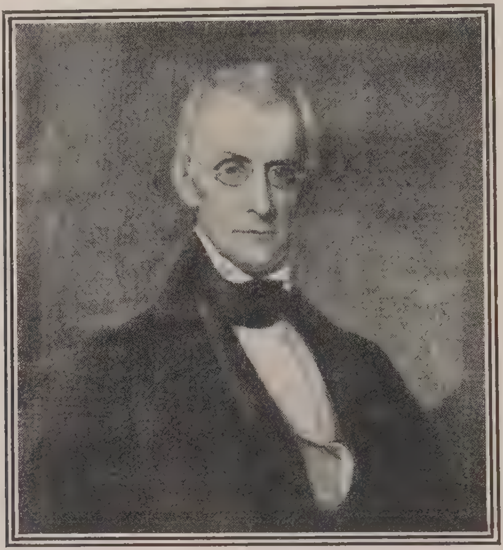
This feature of Pennsylvania journalism is entirely the creation of the last half a century, and most of it within the last twenty-five years. Most of these local weeklies are partisan newspapers, and the attitude they assume in an important campaign in the State is an unerring index of the political trend among the people. When the ruling party of the State has an acceptable ticket, and is in good position to make a successful battle, it has the hearty support of probably two-thirds or more of these local newspapers, but when factional war is developed in the county or district contests, the village weekly newspaper becomes a very important factor and fights the local battle with great earnestness and power. The existence of a large majority of these newspapers is hardly known even in general newspaper circles, but they constitute a very important feature in the extraordinary progress that journalism has made in our great Commonwealth and they are certain to grow, as new towns are rapidly developed by our matchless industrial advancement.

The Sunday newspaper is a comparatively modern feature of American journalism, but it has forged to the front so rapidly that it is to-day the most widely read and influential of our newspaper publications. I well remember a half century ago when there was but one Sunday newspaper published from a regular daily newspaper office, and that was the New York Herald, by the elder James Gordon Bennett. He started the Herald as a penny free lance journal, but he was a very accomplished journalist, singularly fertile in his perception of newspaper progress, and when he advanced the Herald to the present size of its pages and published it daily and Sunday as a six-column folio, precisely the size of the present pages of that newspaper, he decided to issue it every day of the year. His Sunday paper was generally regarded by the journalism of the country as a degradation of the great profession. There were Sunday weeklies in all of the great cities, and some of them attained considerable prominence, such as Noah's Weekly Messenger, and the Sunday Dispatch of New York, and the Sunday Dispatch of Philadelphia, but the general rule of the Sunday weekly journalism of that day was to indulge in offensive personalities and yellow sensationalism. The Herald, however, had a very large independent class of readers, and its Sunday edition was well maintained, but it differed in no respect from any other issue of the week. The Sunday Herald in its early days was simply a six column four page folio, and no attempt was made to add any literary or exceptional features to the Sunday paper.

During the Civil war a number of our newspapers were compelled at times to issue Sunday editions, but it was always done with an apology. The demand for detailed news of any important battle required them when exciting war news came Saturday evening or night, to issue an edition on Sunday morning. The first attempt to publish a Sunday journal in connection with a daily newspaper in Philadelphia was made by Col. Forney, who announced a regular Sunday edition of the Press. It was met with a storm of opposition from the churches and very many of our business men. Col. Forney met the assaults with a defiant vindication of the correctness of his position. While he made his Sunday edition of the Press reasonably profitable, he soon discovered that the Sunday issue was seriously affecting the business of his daily, and he finally gave up the contest and sold his Sunday issue to an outside party, by whom it was published for several years when the new ownership of the Press purchased it back again, and has since then published a regular Sunday edition.

After Col. Forney's unfortunate experiment no attempt was made to publish a Sunday newspaper as a regular edition of a morning daily in Philadelphia until some twenty-five years ago, when the Times renewed the experiment. As I was then chief editor of that journal, I remember how carefully the management of The Times considered the question of issuing a regular Sunday edition, and during more than a year preceding the issue the publisher and myself had repeated conferences with ministers and business men. I remember meeting a number of committees of ministers who generally were very vehement in their opposition to a Sunday paper, protesting that it would degrade the attitude of The Times and do infinite harm to the public. I reminded them that the work of the Sunday newspaper was almost wholly done on a secular day of the week, while the work of the paper issued on Monday was done wholly on Sunday, and when I inquired whether any of them would be content to miss a paper on Monday morning, I found, as a rule, that while they objected to the Sunday paper the labor of which was done on Saturday, they would not dispense with the Monday paper, the entire labor of which was done on the Sabbath. We took great pains to disarm the prejudice of the ministers and people generally who were opposed to Sunday newspapers by calling their attention to the fact that there were fully one hundred thousand copies of Sunday newspapers printed in Philadelphia, and that those journals, with a single exception, that did not have one-fourth of the entire circulation, were of a most disreputable character, and were pouring out a steady stream of moral poison to the community. We argued that the people would read newspapers on Sunday, and that it was certainly important to give them a paper that they could read with profit on any day of the week, including the Sabbath. The result was that when The Times announced the publication of a Sunday issue it was not met with the same opposition that confronted Col. Forney, and it at once attained a very large circulation.

The opposition to Sunday journalism was not overcome, but it was greatly tempered by the efforts we had made to have it understand the true mission of a reputable Sunday newspaper, and the character of the Sunday issue of The Times was such that it could not be criticised as a visitor to any home in the land. Notwithstanding the success of the Sunday edition of The Times it was some years before more daily publishers ventured to issue a Sunday newspaper. The Press, under the editorial direction of Charles Emory Smith, was next to issue a Sunday paper, and it also attained a very large measure of success, as its five-cent Sunday paper, far surpassing even the largest of the magazines in reading matter, more than doubled the circulation of the regular edition. The Record followed with a single sheet Sunday issue at two cents a copy, which has now grown to a twenty-page illustrated Sunday newspaper without increase of price, and has for many years enjoyed a circulation largely in excess of one hundred thousand. The Inquirer was next in line, and also achieved great success by a large illustrated Sunday edition, leaving the venerable North American and the next most venerable Public Ledger as the only two morning journals of the city, which were expected never to depart from the old rule of publishing a paper only on the secular days of the week, but young blood and energy succeeded the old control of the paper, and the Sunday edition of the North American is now one of the most attractive and successful of our Sunday journals. The Ledger was the last to yield, but



Neville B. Craig

Historian; editor; born 1787; died 1863. Engraved especially for this work from a photograph in possession of the Western University of Pennsylvania new masters finally came to it, and the Sunday Ledger is sung out on the streets by the newsboys along with the Sunday editions of every morning newspaper published in Philadelphia. Pittsburg was behind Philadelphia in developing the great Sunday newspaper, but it is now issued from the office of every morning daily in that city, while a number of the inland dailies which are published in the morning instead of evening, also issue Sunday editions.

The advent of the Sunday newspaper has wrought a revolution in American journalism. Large as was the circulation of the leading dailies, the circulation of their Sunday editions is, as a rule, very much larger, and the Sunday newspaper reaches almost every home of ordinary intelligence in our cities, and reaches every inland town of the State. They are not only great newspapers, but they are complete magazines of the best literature of the country, besides exhibiting the very highest standard of art in their illustrations. The illustrations of the Sunday newspapers to-day surpass the illustrations of our best magazines, and they are given in bewildering abundance. Our great Sunday newspapers are not only high art publications, but they are complete newspapers with an infinite variety of the best literature, and to these are added special society, sporting, dramatic and other departments each of which is almost a newspaper within itself.

While the cheap daily newspaper has extended its circulation into every community of the State, the more costly Sunday newspaper has done more to educate the entire family of every home in which it enters in the matter of general reading than any other agent. It is yet assailed by most ministers and rigid churchmen, but on the other hand there are very many ministers who openly take and read the Sunday newspaper and defend it even in the pulpit as one of the best educators of the present age, and I hazard nothing in saying that the State and country are vastly better to-day because of the almost universal reading of the Sunday newspaper. In the densely populated sections of the country there are

CHAPTER V.

MILITARY AFFAIRS

THE military establishment of Pennsylvania dates its history from the year 1747, although the charter gave the governor authority to levy, muster and train men, and to make war upon and pursue an enemy, even beyond the limits of the province. Twenty years after the charter, in 1702, Lieutenant-Governor Hamilton asked the assembly to pass a bill for "providing what may come against us by land or by sea," but nothing was accomplished under it in the way of organizing a militia force for the public defense. Later on Lieutenant-Governor Evans represented to the assembly the urgent need of enacting defensive laws in the form of militia regulations, and sent to that body the frame of an act for "establishing and regulating a militia," but his measure was not received with favor and no action on it was taken. Like defeat also overtook subsequent bills proposed by the governor, although the assembly did occasionally vote appropriations for "the king's use," for the purchase of bread, beef, pork, flour, wheat and "other grain" for the maintenance of those who voluntarily offered to bear arms in the defense of the province. The "other grain" referred to, according to Franklin, meant black grains, otherwise gunpowder, and while the assembly would not directly sanction the purchase of munitions of war with its appropriations, there is nothing to show that the governor ever was charged with misapplication of public moneys in making use of them for that purpose. But, so far as the assembly was con-

Etched by Albert Rosenthal

From Photo by Gutekunst

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cerned, there was no provision made for raising and maintaining an armed force, that power having been vested in the governor under the terms of the charter.

In 1747, largely through the efforts of Benjamin Franklin, a plan was effected for a military association, which was signed by twelve hundred men of means and prominence in the province, and under this inspiring influence the number was increased to ten thousand. In 1748 the aggregate membership of the "associated companies," by which name the organization soon became known, was twelve thousand, horse, foot and artillery. This notable body was a purely volunteer organization, and was armed and equipped at its own expense, while its officers were selected by the members. Franklin himself was chosen colonel of the Philadelphia regiment, but being unable to serve, another was elected in his stead. During the French and English wars the associators rendered excellent service in the common defense, and later on, after the adoption of militia regulations, the organization was preserved and constituted the effective forces of the State during the war of the Revolution, as may be seen by reference to subsequent pages. In 1756 in the city of Philadelphia there were three of these companies with a total of seventeen officers and two hundred and sixty private men; one troop of horse with five officers and forty men; and one battery of artillery with three officers and one hundred and fifty men. In Bucks county there were nine companies, with a total of thirty-nine officers and five hundred and thirteen men. In York county there were eight companies, with twenty-four officers and six hundred forty-two men. In Lancaster county there were nine companies, with twenty-seven officers and five hundred and forty-five men.

In 1775, in a message to the assembly, Deputy Governor Morris informed that body that the province was still without organized militia or necessary means of defense; but notwithstanding the exigencies of the occasion growing out of the war then in progress the legislative body was slow to act. However, after

Braddock's disastrous defeat the governor gave an order on his receiver-general for £5,000 for the defense of the province, which had the effect to stimulate action by the assembly, and £60,000 were at once voted for "the King's use," but no provision was made for a regularly organized militia, although it was not long deferred. On November 25, the assembly passed "An Act for the better ordering and regulating Such as are willing and desirous to be United for Military Purposes within this Province."

The act was provided to continue in force from its adoption until the 30th of October, 1756. It set forth the opposition of the Quakers, who "are principled against bearing arms themselves," although they do not, "as the world is now circumstanced, condemn the use of arms in others." Under the act it is declared lawful for the freemen of the province to form themselves into companies, "as heretofore they have used in times of war without law." Each company is to choose officers by ballot, a captain, lieutenant and an ensign, who are to be presented to the governor or commander-in-chief for approbation and commission. The companies are to be formed into regiments by the governor.

Another section provides that the governor, or commander-in-chief, and the officers shall meet and make and establish "Articles of War," conformable to the military laws of Great Britain as established by the last parliament for "punishing mutiny and desertion, the different circumstances of this province compared with Great Britain, and of a voluntary militia of freemen, compared with mercenary standing troops, being duly weighed and maturely considered." It is further provided that nothing in the act shall be understood or construed to give power to the governor and officers to make articles or rules that shall in the least affect those of the inhabitants who are "conscienciously scrupluous of bearing arms, either in their liberties, persons or estates, nor any other persons of whatever persuasion or denomination soever, who have not first signed said articles, after due consideration aforesaid." Persons under the age of twenty-one years and any bought servant or indentured apprentice is not permitted to enroll himself in any company or regiment without consent of parents or guardians, masters or mistresses, in writing.

One of the most extraordinary provisions of the act is that which specifies that no regiment or company, or party of volunteers, shall be compelled or led more than three days' march beyond the inhabited parts of the province, nor detained longer than three weeks in any garrison without express agreement first voluntarily entered into and subscribed by every man so to march or remain in garrison.

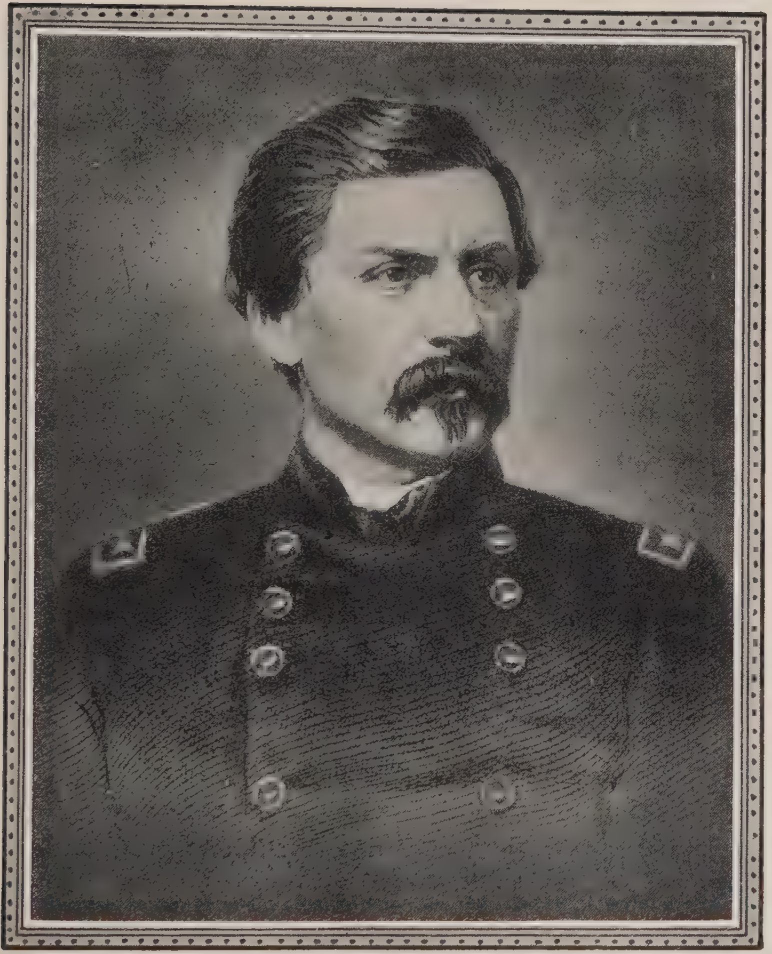
The entire act, while it accomplished the establishment of a temporary military system in the province, was unsatisfactory to the governor, who complained bitterly of its provisions, and characterized it as "a senseless, partial and impracticable bill," but he adds, "as it was to continue only until October next, I passed it, with the hope that experience may convince them (the assembly) that such bills will do infinitely more harm than good." He also says "it is hardly to be expected that the assembly, who are Quakers, will co-operate with the other provinces or defend their own to any material purpose."

On March 29, 1757, less than six months after the expiration of the term of the act just mentioned, the assembly—in which the Quakers had now become a minority only—passed an act for regulating the militia which was more remarkable in its provisions than the former act was unsatisfactory; and because of the unique character of this second assembly bill for the establishment of a military system in the province, free quotation from its sections is made. First, the bill provides for the compulsory enrollment of all male persons between the ages of seventeen and fifty-five years, with instructions for noting against every name the religious society to which each person belongs, "especially such as are Papists, or reputed Papists."

The lists are to be made by the constables and their assistants, and returned to the sheriff, upon which officer is imposed the duty of dividing their respective counties into districts. Each district is to choose its military officers, but especial provision is made that "no Papist, or reputed Papist," shall be allowed to vote for officers or be chosen as such in any district. No person shall be chosen or commissioned captain of a company unless possessed of freehold worth £150, or be otherwise worth £300; lieutenants must possess freehold worth £100, or be otherwise worth £250; and ensigns must possess freehold worth £50, or be otherwise worth £100. Keepers of taverns, tippling-houses, dram-shops, victualing-houses and houses of public entertainment are not to be commissioned as company officers or as colonel, lieutenant-colonel or major of any regiment.

The captains of the several companies are required to receive the lists and prepare muster-rolls, and all persons so enrolled, "not consciencously scrupling the use of arms," are to be armed with a good musket, fuzee, or other firelock well fixed, a cutlass, bayonet or tomahawk, a cartouch-box filled with twelve or more cartridges of powder, twelve or more sizable bullets, and three good flints; and thus armed and equipped, each person is required to attend muster for training, discipline and military exercise on the first Mondays in the months of June, August, November and March.

The bill also provides that the governor, or commander-in-chief, is to form the companies into regiments, and the company officers and men are to choose for each regiment a colonel, lieutenant-colonel and major. Every colonel must possess real estate in this province worth £500; every lieutenant-colonel, £400, and every major, £300, or double the value in personal estate in each case. Any number of men not less than seventeen nor more than sixty are authorized, with permission from the colonel, to form themselves into a troop of horse; and any number of men not less than sixty nor more than one hundred, in or near Philadelphia, are authorized to form a company of artillery. Not more than three companies are to be formed for managing the artillery of the province and the battery or fort near the city.



George Brinton McClellan

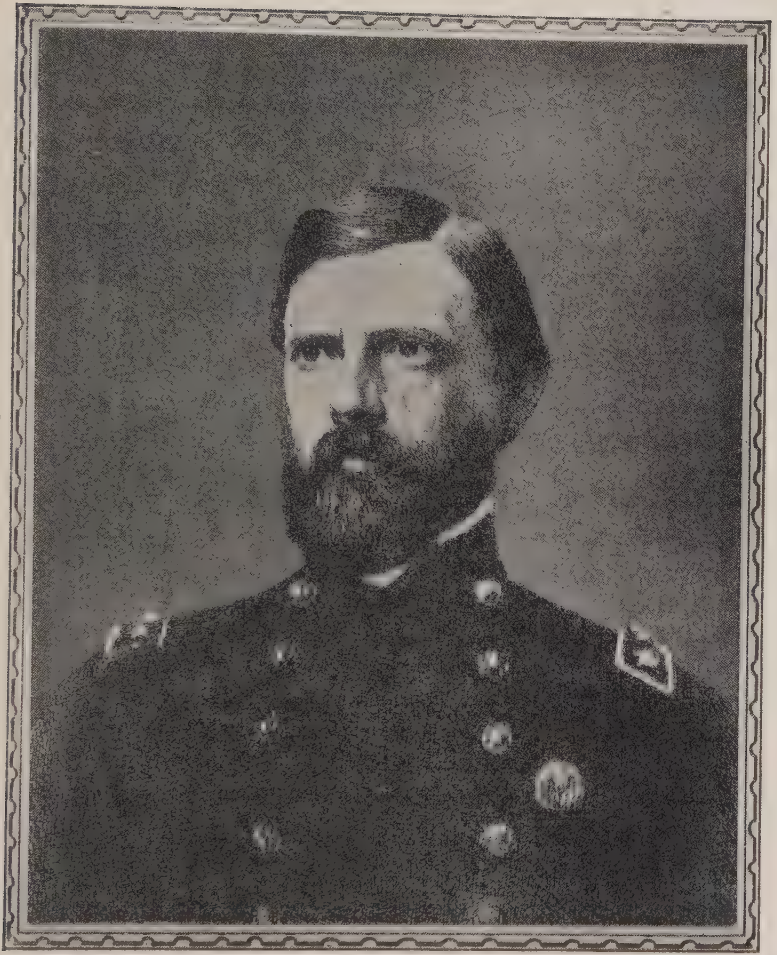
Soldier in Mexican and Civil wars; major-general Ohio volunteers, 1861; and of the United States Army, 1861; commander of all the armies of the United States, 1861; commander Army of the Potomac, 1862; candidate for president of the United States, 1864; governor of New Jersey, 1877

One section of the act provides "that all Quakers, Menonists, Moravians and others conscienciously scrupulous of bearing arms, who shall appear on any alarm with the militia, though without arms, and obey the commands of the officers in extinguishing fires, suppressing insurrection of slaves or other evil-minded persons during an attack, in caring for wounded, conveying intelligence as expresses or messengers, carrying refreshments to such as are on duty, and in conveying to places of safety women and children, aged, infirm and wounded persons, are free and exempt from the penalties of the act."

Another section provides "that all arms, military accoutrements, gunpowder and ammunition of what kind soever, any Papist or reputed Papist within this Province hath or shall have in his house or houses, or elsewhere, one month after publication of this act, shall be taken from such Papist or reputed Papist," etc.; and further, if any such Papist or reputed Papist shall attempt to conceal such arms, military accoutrements, gunpowder and ammunition, as aforesaid, or refuse to declare the same to the justice of the peace, such person so offending shall be imprisoned for the space of three months, "without bail or mainprize." A subsequent section says that whereas all Papists and reputed Papists are by the act exempted from performing military duty, but partake of the benefits and protection thereof, that every male Papist or reputed Papist between the ages of seventeen and fifty-five years shall pay to the captain of the company in the district where he resides the sum of twenty shillings. It is also declared that in as much as the British parliament has exempted from military duty all members of the Unitas Fratrum, or United Brethren, all such are required to pay twenty shillings to the county commissioners.

The records fail to disclose the strength of the militia in the province under the act just mentioned, but one authority states that in 1757 there were in service during the year twenty-nine cannon, fourteen swivels and 4,789 firearms, from which it is inferred that the entire military forces at that time numbered between 5,000 and 6,000 men. The act was continued in force until the sitting of the assembly in 1758, but the system established was maintained until after the close of the French and English war, in 1763. Subsequently and previous to the outbreak of the Revolution there does not appear to have been any distinct control of military affairs except that exercised by the assembly and the provincial council, and there was no further effective legislation in relation to the militia until 1775. On June 30 of that year the assembly by resolution approved of the "association entered into by the good people of the colony for the defense of their lives, liberty and property." At the same time the legislature established a Committee of Safety, of twenty-five members, to constitute a board of war for the purpose of calling into service so many of the associators as was deemed sufficient for each occasion; for paying them, and supplying them with necessaries incident to their service; for providing for the defense of the province against insurrection and invasion, and for encouraging the manufacture of saltpetre. The committee of safety was formally organized July 3, 1775, with Benjamin Franklin as its president, and thenceforth had supreme control of the land and naval forces of the province until October 13, 1777, when its powers were transferred to the body known as the council of safety, the latter comprising the supreme executive council and nine others. The council of safety was continued only to December 6, 1777, and then was dissolved by proclamation of the supreme executive council, the military authority then being resumed by that body and the assembly.

The associators, previously mentioned, constituted the effective defensive body of the province during the Revolution, and was organized under "Articles of Association of Pennsylvania" with the following compact: "We, the officers and soldiers, engaged in the present association for the defense of American liberty, being fully sensible that the Strength and Security of any Body of Men, acting together, consists in just regularity, due subordina-



John Fulton Reynolds

Soldier; commander State defence militia during Maryland campaign; commissioned major-general of volunteers, 1862; colonel 5th United States infantry, 1863; commander left wing on first day at Gettysburg and was killed soon after placing his men

tion, and exact obedience to command, without which no individual can have that confidence in the support of those about him, that is so necessary to give firmness and resolution to the whole, Do Voluntarily and freely, after consideration of the following articles, adopt the same as the Rules by which we agree and resolve to be Governed in all our Military concerns and operations until the same, or any of them, shall be changed or dissolved by the Assembly, or Provincial Convention, or in their recess by the Committee of Safety, or a happy reconciliation shall take place between Great Britain and the Colonies."

The articles comprise thirty-two sections, and are signed by all the members. So nearly as possible all the exigencies of the war were contemplated in framing the sections, and full provision was made for complete military discipline and regulation.

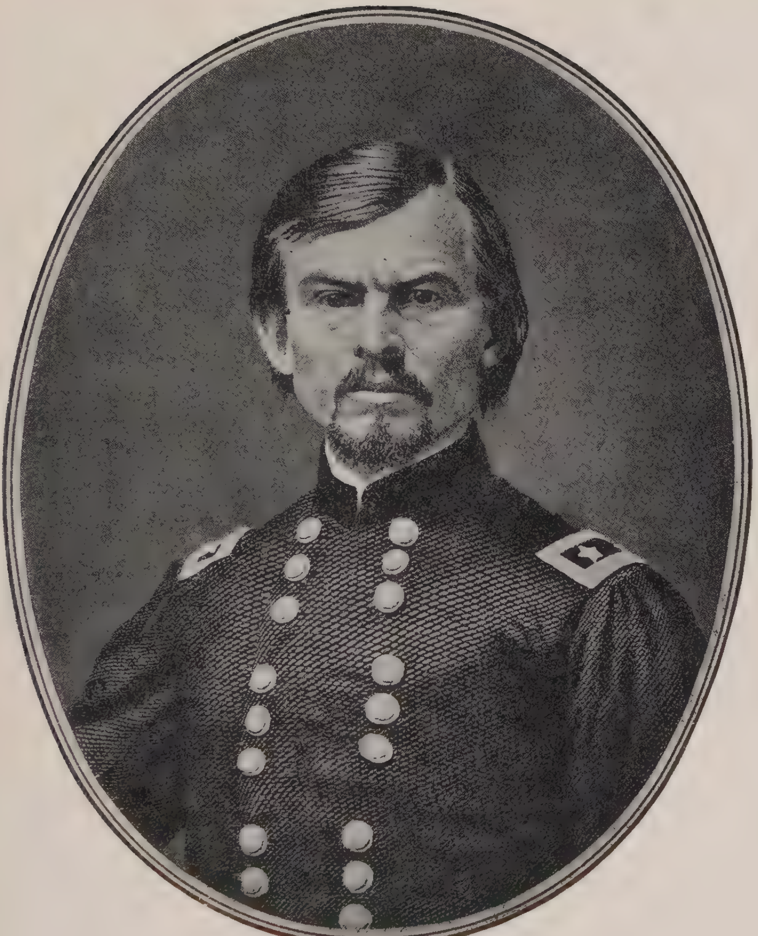
During the Revolution the associators comprised one of the most efficient bodies of men in the service and were the mainstay and support of Pennsylvania during that long struggle. The aggregate number of men on the rolls was more than 35,000, although not all were constantly under arms. In 1775 the effective militia of the province numbered 5,998 men, of whom 5,000 were associators, comprising ten battalions. Besides these there were 600 men of the Pennsylvania battalion and 398 in the naval service. In 1776 the associators comprised fifty-three battalions and a total of 25,000 men. The other forces of the year were the Pennsylvania line, enlistments for one year, 6,000 men; the Flying camp of 6,000 men; in privateer service, 1,137 men, and in Pennsylvania navy, 2,190 men. In 1777 the associators were diffused through various branches of the military forces, the latter then comprising the Pennsylvania line, three years men, 7,800; the militia, 2,500; the rangers, on three calls, 7,500; the Pennsylvania navy, one year men, 1,500; the continental navy, 350; and privateers, 164. Total number in service for the year, 19,814.

In 1778 the total forces comprised 14,514 men, divided substantially as follows: Frontier rangers, 7,500; militia, 1,500;

continental line, 1,200; seven-months men, 1,800; eighteen-months men, 720; privateers, 1,314; navy, 480. In 1779 the total number of militiamen in service was 1,500; rangers, 3,420; recruits to serve during the war, 1,230; seven-months men, 375; continental navy and privateers, 4,665; Pennsylvania navy, 250. In 1780 the total was 10,699, comprising militiamen enlisted for three years, 1,350; frontier rangers, 4,400; continental navy and privateers, 2,809; regular militia, 1,260; seven-months men, 600; Pennsylvania navy, 280. In 1781 the rangers numbered 3,080; the Pennsylvania militia, 1,375; re-enlistments, 700; continental navy and privateer service, 4,322; Pennsylvania navy, 195, total, 9,672. In 1782 the total forces were diveded as follows: Rangers, 2,640; militia, 450; recruits for service outside the State, 550; Pennsylvania navy, 217; continental navy and privateers, 1,953; total, 5,810. In 1783 the total was 2,210, viz.: Rangers, 1,760; militia, 450.

The grand total of men in all arms of service, under various calls to duty, during the period of the Revolution, was 120,514. This, however, is an estimated aggregate, due to the imperfect manner in which records were kept during the early years of the war, the brief periods of service of many bodies of militia and the fact that many men were under arms of whose service no record whatever was kept.

Frequently during the war for independence the legislature passed acts for regulating the military forces of the Commonwealth, but in most cases the laws adopted were for temporary purposes, necessitated by the exigencies of the period, and all were repealed by the more formal act of 1780. The date of passage of these laws were March 17, 1777, June 19, 1777, December 30, 1777, and April 5, 1779. The act of March 30, 1780, entitled "An Act for the regulation of the militia of the Commonwealth of Pennsylvania," was the first approach toward the establishment of the military system of the State upon a practical basis, and provided for the maintenance of militia companies in every county,



Franz Sigel

Mathematician; educator; soldier; editor; commissioned major-general 1862; commander Pennsylvania Reserve 1863; commander department of the Army of West Virginia 1864

the division of the State into districts containing not less than 400 nor more than 1,000 men each, the enrollment of all male white persons between the ages of eighteen and fifty-three years, the appointment of lieutenants and sub-lieutenants for each company, and the formation of companies of infantry, artillery and horse. In 1783 a supplemental act modified many of the provisions of the former act and made more specific regulations for the discipline and maintenance of the troops. As then established, the military laws were continued in force until 1793, when they were superseded by other and more adequate legislative enactments.

The act of April 11, 1793, was authorized by the constitution of 1790. It repealed all former laws relating to the militia and served as the foundation on which the present splendid military establishment has been built up. The preamble to the enacting clause reads as follows: "Whereas, a well regulated militia is the only safe and constitutional method of defending a free State; and whereas the several laws enacted by the legislature of this Commonwealth, for the regulating of the militia thereof, have been found to require material alterations, in order to which it has been thought more advisable to revise the whole system than to amend it by supplementary statutes, therefore be it enacted," etc.

The act provides that each and every able-bodied white male citizen between the ages of eighteen and forty-five years (with certain specified exceptions) shall severally be enrolled in the militia; that the militia shall be divided into divisions, brigades, regiments, battalions and companies, shall be armed, and must appear on exercise days. The provision for officers is as follows: To each division, one major-general and two aids-de-camp with rank of major; to each brigade, one brigadier-general, with one brigade inspector, to serve also as brigade-major with rank of major; to each regiment, one lieutenant-colonel commandant; to each battalion, one major; to each company of infantry, one captain, one lieutenant, one ensign, four sergeants, four corporals, one clerk, one drummer, and one fifer or bugler; that there shall be a regimental staff, to consist of one adjutant, and one quartermaster, to rank as lieutenants, one paymaster, one surgeon, one surgeon's mate, one sergeant-major, one drummajor, and one fifemajor; to each company of artillery, one captain, two lieutenants, four sergeants, four corporals, six gunners, six bombardiers, one drummer, and one fifer; to each troop of horse, one captain, two lieutenants, one cornet, four sergeants, four corporals, one saddler, one farrier and one trumpeter.

The act also provides for one adjutant-general for the whole militia. The adjutant-general, major-general, brigadier-general and brigade inspector are to be appointed and commissioned by the governor. It is made the duty of the adjutant-general to distribute to the several corps all orders from the governor, as commander-in-chief of the militia of the State; to attend all public reviews when the governor shall review the militia; to obey all orders from the commander-in-chief relating to carrying into effect and perfecting the military discipline established by the act. The act contains nineteen rules for regulating the militia, but a recital of their contents is not deemed necessary in this article.

In 1799, by an act passed April 9, many of the provisions of previous acts were repealed and new regulations were established for the military department; the territory of the State was set off into divisions and two "colours," or standards, were adopted for use in the militia service. On April 6, 1802, an act was passed to take effect August 1, which repealed the militia laws then in force, but which re-enacted many of the provisions of the act of 1799. Under the new act the militia forces of the State were separated into divisions consisting of two brigades; brigades consisting of not less than four regiments; regiments comprising two battalions; battalions comprising not less than four companies exclusive of a flank company; and companies of not less than sixty-four nor more than one hundred privates.

The regimental "colours" provided for under this act, to be furnished by the State, are particularly described as follows: "The length of staff to be nine feet, and surmounted with brass spears; the fly of each of said colours to be six feet, six inches in length, and four feet, six inches on the staff; on the fly of one, to be made of dark blue colored silk, is to be painted an American eagle, with expanded wings, supporting the arms of the State," "or some striking part thereof;" in the upper corner, next to the staff, shall be inserted in white letters or figures, the number of the regiment and the word "Pennsylvania" encircled and ornamented with thirteen white stars. The fly of the other color is to be composed of thirteen red and white alternate stripes, with the upper corner next to the staff colored and appropriated as has been mentioned. Each color is to have two silk tassels.

General Meade's Headquarters

On Taneytown road, Gettysburg. Engraved especially for this work from a negative by W. H. Tipton

In regulating the uniform, or "military dress," the act provides for the infantry, light infantry and cavalry, a blue coat faced with red, with linings and buttons of white; for the artillery a blue coat faced and lined with red, with yellow buttons; for the general and staff officers, except regimental staff, blue faced with buff; for the regimental staff, the uniform of the regiment to which they belong. The cockade to be worn by the militia shall be blue and red.

The arms[1] of the militia are provided for as follows: The commissioned officers of the infantry, light infantry, grenadiers and riflemen shall severally and at their own expense be armed with a sword or hanger, and an espontoon; and the artillery, with a sword or hanger, a fuzee, bayonet and belt, and a cartridge box to contain at least twelve cartridges. The commissioned officers of the several troops are to provide themselves with good horses, at least fourteen and one-half hands high, and shall be armed with a sword and a pair of pistols, the holsters of which are to be covered with bearskin caps. Each light-horse man, or dragoon, must provide himself with a serviceable horse, at least fourteen and one-half hands high, a good saddle, bridle, mail-pilion and valise, holsters covered with bearskin caps, a brass plate and crupper, a pair of boots and spurs, a pair of pistols, a sabre, and a cartridge box to contain at least twelve pistol cartridges.

The act also provides that the adjutant-generals, major-generals, brigadier-generals and brigade inspectors are to be appointed and commissioned by the governor. Major-generals are to appoint their own aids-de-camp, and brigadier-generals their own brigade majors. Field officers of regiments appoint the regimental staff. The militia of each district elect lieutenant-colonels; those of the battalions elect the majors; and the militia of each company elects its captain, lieutenant, ensign, four sergeants and four corporals. All regiments are given designating numbers, and the pay of the militia in service is to be the same as in the United States army.

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[1] No arms were furnished to the militia, in the first instance, by the State itself, but were furnished by the United States to all the States and Territories. By an act of congress passed in 1808 (amended in 1855) the sum of $200,000 annually was appropriated for the purchase of arms to be distributed in proportion to the respective number of militia, and later, by the amendment, in proportion to the respective representation in congress.

A brief review of the physical condition of the militia organization[1] of the State at this time is interesting in this connection. According to the report of Adjutant-General Humpton to the governor, in February, 1802, the number of men subject to military duty was 88,707. The territory of the State comprised thirteen military divisions, and each division two brigades. The major and brigadier-generals, with the total number of enrolled militia in each division, were as follows: First division (city and county of Philadelphia), Thomas Proctor, major-general; Jacob Morgan, John Shea, brigadier-generals; enrolled militiamen, 10,279. Second division (Bucks and Montgomery counties), Andrew Porter, major-general; Francis Swaine, Augustine Willett, brigadier-generals; militiamen, 7,507. Third division (Chester and Delaware), John Heifter, major-general; John Boyd, John Davis, brigadier-generals, militiamen, 6,412. Fourth division (Lancaster), John Steele, major-general; Henry Hambright, Benjamin Mills, brigadier-generals; militiamen, 6,412. Fifth division (York and Adams), William Gilleland, major-general; Conrad Sherman, Michael Simpson, brigadier-generals; militiamen, 6,288. Sixth division (Berks and Dauphin), John A. Hanna, major-general; Christian Lower, Philip Gehr, brigadier-generals; militiamen, 8,235. Seventh division (Cumberland and Franklin), William Irwin, major-general; James Chambers, David Mitchell, brigadier-generals; militiamen, 7,086. Eighth division (Northampton and Wayne), Thomas Craig, major-general; Robert Brown, Samuel C. Seely, brigadier-generals; militiamen, 4,883. Ninth division (Northumberland, Lycoming and Luzerne), William Montgomery, major-general; William Hepburn, William Wilson, brigadier-generals; militiamen, 6,535. Tenth division (Mifflin, Centre and Huntingdon), John Patton, major-general; John Bratton, William McAlevy, brigadier-generals; militiamen, 5,033. Eleventh division (Bedford, Fayette and Somerset), John Piper, major-general; Ephraim Douglass, Robert Philson, brigadier-generals; militiamen, 6,784. Twelfth division (Washington and Greene), John Taylor, major-general; John Hamilton, John Minor, brigadier-generals; militiamen, 5,622. Thirteenth division (Westmoreland, Allegheny and Crawford), Presley Neville, major-general; Charles Campbell, Alexander Fowler, brigadier-generals; militiamen, 8,500.

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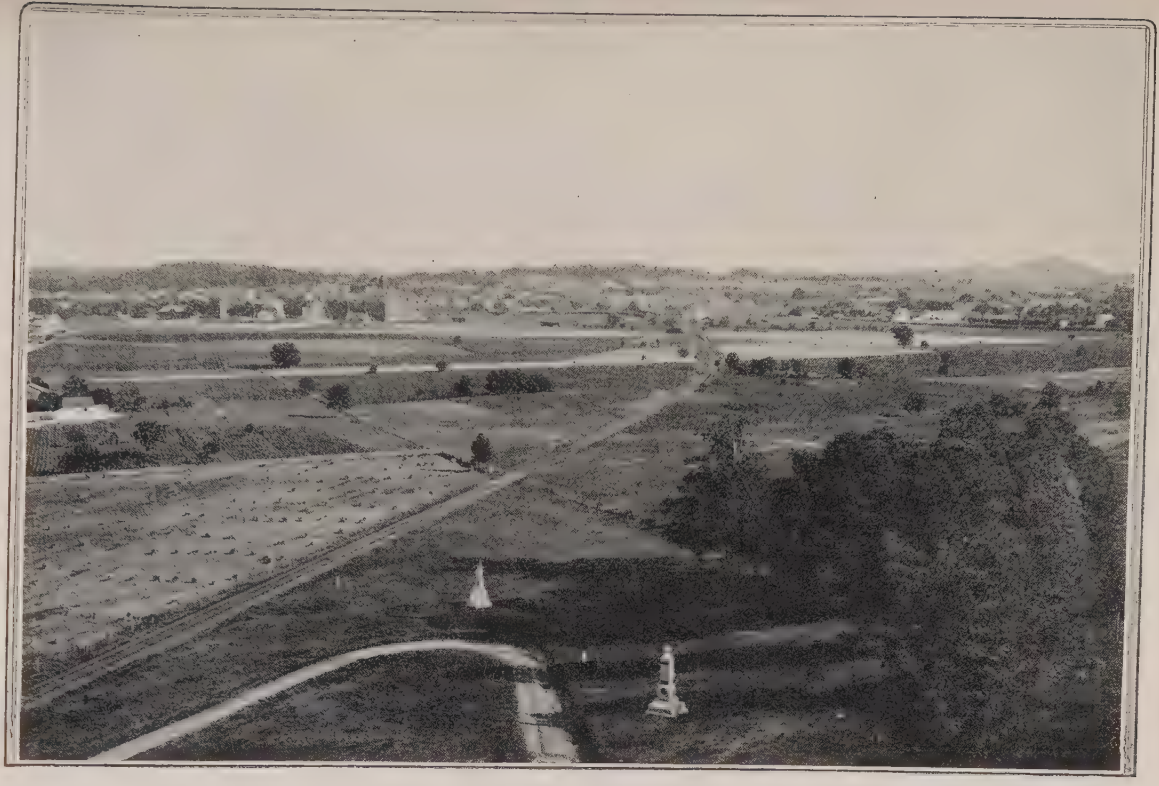
[1] The militia forces of the State comprised artillery, cavalry, grenadiers, light infantry and riflemen.

The evident purpose of the act of 1802 was to establish the militia of the State on a basis similar to that employed in the military department in other States, and while that end was in part accomplished the system did not long continue without further legislative alteration. By an act passed April 9, 1807, the whole military establishment was again remodeled, and many of the provisions of the act of 1802 were repealed. Under the new law regiments were to contain not less than 500 nor more than 1,000 men; volunteer companies were authorized and regulations were provided for them; the regiments were renumbered, and special rules provided how and when the militia might be called into active service. On March 26, 1808, a supplemental act authorized additional volunteer companies, the formation of which appears to have become popular about this time. This movement had its origin in Philadelphia and soon extended into other localities, until nearly every company in the service was resolved into a volunteer organization with a distinguishing name, yet remained a part of the military system of the State. In 1808 the legislature authorized the troops of cavalry, companies of artillery, riflemen and light infantry comprising the "Military Legion of Philadelphia," to elect a colonel commandmant and other field officers.

Thus was constituted the militia forces of the State during the second war with Great Britain. The records of its soldiery



Gettysburg

View from Observatory, showing first day's battlefield. Reproduced for this work from a negative by W. H. Tipton

in that struggle cannot become a part of this chapter, being treated elsewhere in this work, yet the deeds of valor performed by the volunteers and the regular militia form an honorable page in national military history.

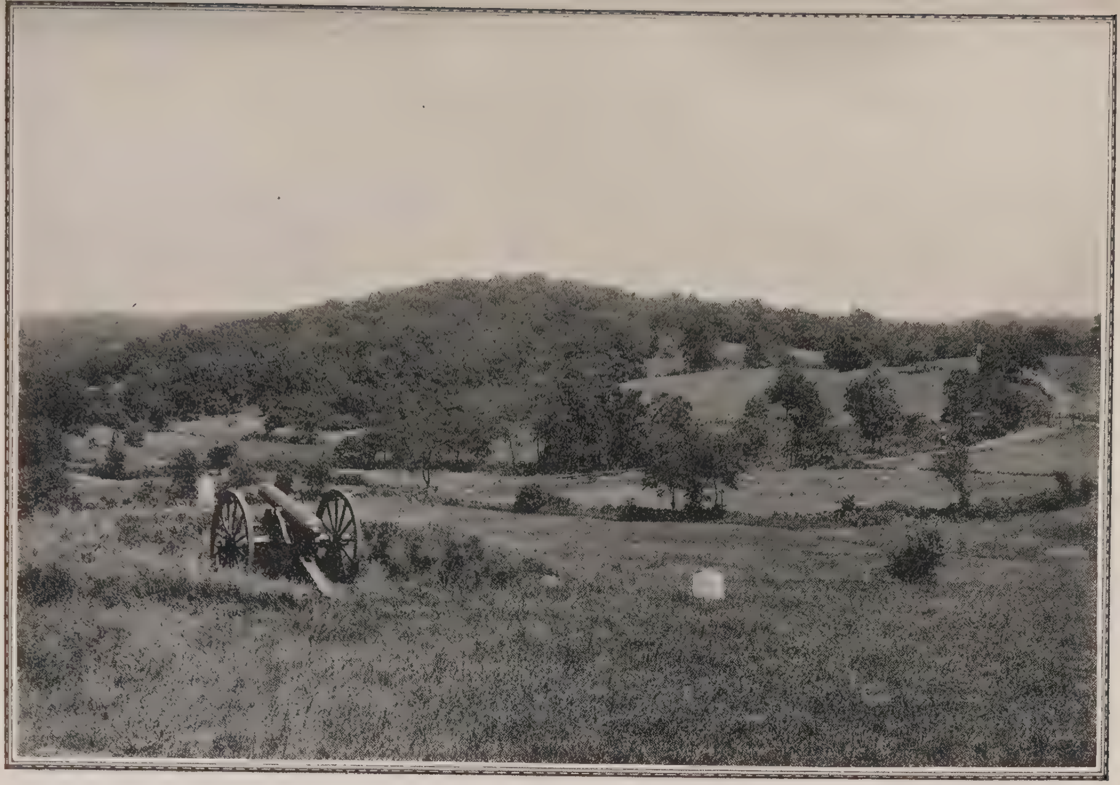
In 1822, by an act passed April 2, the militia system was again remodeled, and the territory of the State was made to comprise sixteen military divisions, constituted as follows: First division, the city and county of Philadelphia; Second, the counties of Bucks and Montgomery; Third, Chester and Delaware; Fourth, Lancaster; Fifth, York and Adams; Sixth, Dauphin, Lebanon, Berks and Schuylkill; Seventh, Northampton, Pike and Lehigh; Eighth, Northumberland, Union, Columbia, Luzerne, Susquehanna and Wayne; Ninth, Lycoming, Potter, McKean, Bradford and Tioga; Tenth, Mifflin, Centre, Huntingdon and Clearfield; Eleventh, Cumberland, Perry and Franklin; Twelfth, Bedford, Somerset and Cambria; Thirteenth, Westmoreland and Fayette; Fourteenth, Washington and Greene; Fifteenth, Allegheny, Armstrong, Indiana and Jefferson; Sixteenth, Beaver, Butler, Mercer, Crawford, Erie, Venango and Warren.

Under this act the regiments retained their former numbers and many of the old regulations were readopted. The main purpose of the act appears to have been the establishment of courts martial and the definition of their powers and duties, regarding which previously there had been some controversy between the State and federal authorities, growing out of the imposition of fines during the war of 1812-15. On May 4, 1822, the United States congress passed an act vesting in Pennsylvania the right of the federal authorities to all fines assessed for non-performance of military duty during the war. This State had furnished the government with more men than was required, and among the number were many members of volunteer companies. However, in the enforcement of drafting regulations the number of delinquencies was so great that the fines assessed aggregated nearly $350,000. The dispute arose over the question whether the federal or State authority was entitled to recover the fines, and it was settled by the act referred to.

After the reorganization of the militia in accordance with the provisions of the act of 1822 there was no further material change in that department until 1844, when the legislature (April 25) passed "An act to reduce the expenses of the militia system of this Commonwealth," etc. Under the previous laws many of the companies had changed in character to parade organizations and frequently were furnished with costly and showy uniforms, while discipline and military regulations were of second importance. The acts of assembly, from 1808 to 1844, abound in laws for designating independent volunteer companies with high-sounding names, in exempting them from drill with the regular militia, as provided by the regulations, and occasionally appropriations were made for the benefit of certain companies. On days of general muster music was a special feature of the occasion and its cost was made a charge upon the State. Numerous demands in one way and another led to extravagant expenditures, and at last the legislature saw the necessity of retrenchment; hence the act, which was in the nature of a reform measure rather than a change in the military establishment.

In 1843 the sum appropriated for militia expenses was $20,000, but the act of 1844 provided that no compensation be allowed any company for music at regimental or battalion training, except the sum of three dollars to be paid by the commanding officer of the regiment or battalion. It was also provided that in future each company should be entitled to one bass and one tenor drummer and one fifer for four days in each year, at one dollar each per day. In 1846 the State appropriated $15,000 for militia expenses. In 1847 the amount was $12,000, but in the next year the appropriation was increased to $22,000.

On April 17, 1849, the legislature passed "An act to revise the militia system, and to provide for the training of such only as shall be uniformed." This act repealed all former laws regulat-



Culp's Hill, Gettysburg

From East Cemetery Hill. Engraved for this work from a negative by W. H. Tipton

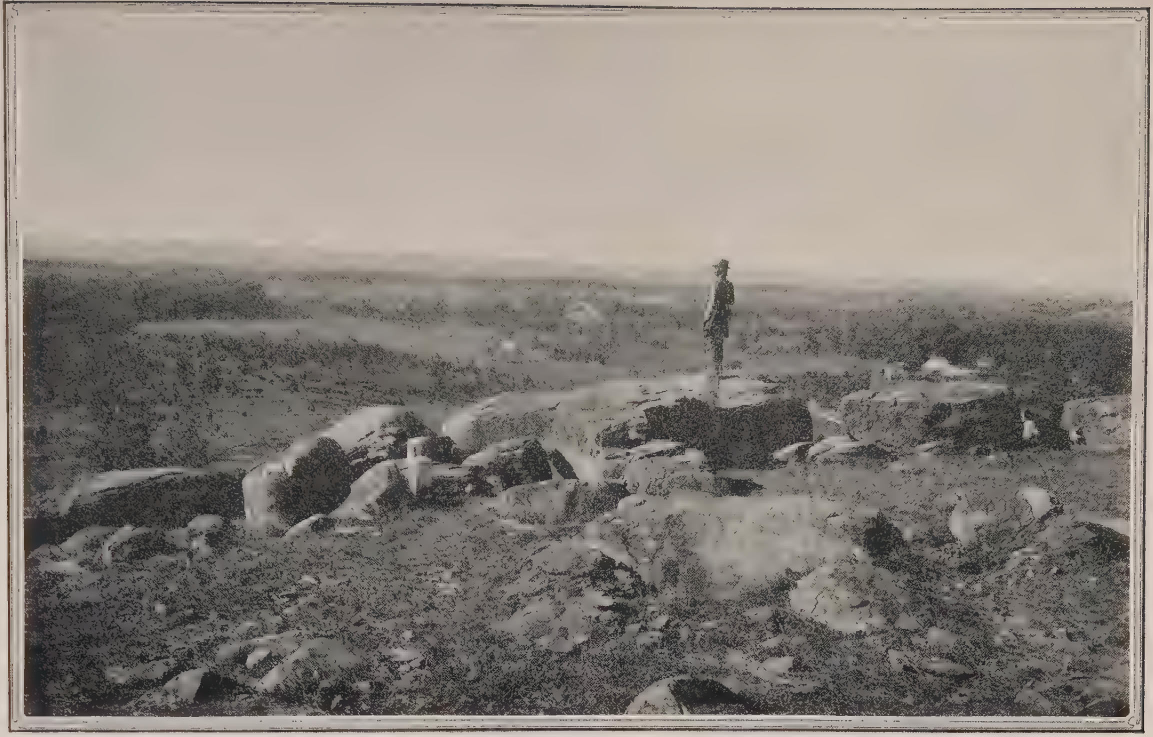
ing the militia and established that department upon a more practical and permanent basis of operation, and as well cleared the service of several embarrassing elements. It required that every free able-bodied white male person (except those exempt from military duty) between the ages of eighteen and forty-five years must provide himself with such uniform as should be considered proper for a volunteer company; that persons so uniformed should form companies, and the companies form battalions; that uniformed companies meet for training twice yearly; that each county constitute a separate brigade, and that the city and county of Philadelphia constitute three brigades; that the territory of the State should comprise twenty military divisions; that the adjutant-general prepare and distribute rules for the government of the volunteers, and that brigade inspectors annually report to the adjutant-general the number and condition of all regiments and battalions.

Still another step was taken in the direction of more perfect organization in 1858, under an act passed April 21, entitled "An act for the regulation of the militia of this Commonwealth," which provided that all able-bodied white male citizens between the ages of twenty-one and forty-five years (not exempt) should be subject to military duty. The former requirements relating to military divisions and brigades were retained, and it was provided that each brigade, regiment, battalion, company, troop and squadron be made to conform to the United States regulations relating to discipline and uniform, but that a regiment might consist of five companies. Volunteer companies were authorized, and provision was made for the appointment and election of all officers, for the safe-keeping of arms, for parades and rendezvous of the troops, for courts martial and the enforcement of penalties, and also for the appointment of twenty aids (one for each division) to the commander-in-chief, each with the rank of lieutenant-colonel.

In his annual report of the condition of the military department for the year 1859, Adjutant-General Wilson makes some brief allusion to the benefits derived from the militia laws enacted in the preceding year and says that through the earnest co-operation of the commissioned officers the department has attained a high degree of efficiency and further: "A true military spirit seems to pervade all ranks. The citizen soldier is our sure defense from a foreign foe, and our certain reliance in time of insurrection, disorder and riot." The report shows that the whole number of persons in the State subject to military duty at that time was 350,000, of whom 17,500 were members of uniformed volunteer companies.

According to the adjutant-general's report for the year ending December 31, 1860, the entire militia force of the State subject to military duty was about 355,000 men, of which number about 19,000 were members of uniformed volunteer companies; that there were 476 of these companies, the average membership in each being about forty men. The arms of the State, all in possession of the companies, comprised 12,080 muskets, 4,706 rifles, 2,809 cavalry swords and sabres, 3,149 pistols, 69 pieces of ordnance (six-pound bronze cannon) and about 575 camp tents in fair condition. Of these arms about 2,500 muskets were of new model and 1,200 rifles were of modern style, but the balance was comprised of old heavy flint-locks, unfit for use in the field, "as likely to injure the possessor as any one else." The pieces of ordnance were in good condition, though not of modern types, but only about 500 of the cavalry swords were fit for service.

Thus, at the outbreak of the war of 1861-5, the volunteers of the Pennsylvania militia possessed only 4,200 effective small arms, while 14,500 members of organized and uniformed companies had no arms fit for use when they entered the United States service in response to the president's call for troops in the spring of 1861. During the period of the war the character and composition of the military forces were changed and enlistments were accepted both below and above the age limits prescribed by the act of 1858. The military rolls show thousands of names of volunteers under the



Gettysburg

Little Round Top in the foreground, on which is seen Warren's statue. The view looks over the Valley of Death to Wheatfield, Peach Orchard and Bloody Angle. Engraved especially for this work from a negative by W. H. Tipton.

age of twenty-one years at the time of enlistment, while many others are noted who were over forty-five years.[1] But of whatever age, condition or calling, the demand for troops met with generous, loyal response, and on April 18, 1861, three days after President Lincoln's first call for 75,000 militia from the several States to suppress treasonable insurrection, five volunteer companies of Pennsylvania troops arrived in Washington, ready for active service.

Under that call the quota of this State was 14,000 men, and within ten days next following April 18 more than 25,000 loyal sons of Pennsylvania were in Camp Curtin at Harrisburg, where all the organized militia were ordered to assemble. The volunteers whose services were not immediately required by the war department were temporarily held at Harrisburg, and after the passage of the act (May 15) to organize the "Reserve Corps of the Commonwealth," the men comprising that famous command were ordered to camps of instruction at Harrisburg, Pittsburg, Easton and West Chester. When fully organized the corps, more frequently known as the "Pennsylvania Reserves," comprised fifteen regiments and numbered nearly 16,000 men, there being thirteen regiments of infantry, one of cavalry and one of artillery. They were called into service July 21, 1861, and for the next three years participated in many of the fiercest battles of the war.

Under the several calls throughout the period of the war Pennsylvania furnished troops as follows:

1861—Under the president's call of April 15, for three months men[2] ..	20,979
Reserve corps of Pennsylvania volunteers, sent into the service of the United States for three years under the call of July 22 ..	15,856
Organized under act of congress July 22, for three years	93,759
	130,594

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[1] Enlistments were accepted between the ages of eighteen and fifty years, and many recruits were received under the age of seventeen years.

[2] The three months men were organized and sent out as an army under command of general officers selected by the governor from among the officers of the militia troops of the State.

1862—Under president's call of July 7 (including eighteen nine months regiments)	40,383
Organized under draft ordered by president, August 4	15,100
Eight independent batteries of artillery organized up to this time	1,358
Recruits for three years regiments, forwarded by superintendents of recruiting service	9,259
Enlistments in other States and in regular army	5,000
	71,100
1863—Nineteenth Cavalry (180th regiment), organized under special authority of the war department, for three years	1,066
Organized in department of Monongahela, five regiments; ninety days militia, one company unattached artillery and one company unattached cavalry	3,750
Organized in department of Monongahela for six months service, one battalion and one company of infantry and one battalion and one company of artillery	1,416
Organized in department of Susquehanna in June, militia for ninety days' service	21,292
Organized in department of Susquehanna for six months' service	3,068
"Emergency" militia, department of Susquehanna	7,062
Recruits forwarded by superintendents of recruiting service	4,458
Enlistments in regular army	934
	43,046
1864—Three years men, regiments 181 to 191, both inclusive	9,867
Under call of July 6, for one hundred days' service	7,675
Under president's authority to raise ten new regiments under call of July 18, for 500,000 men for one year	16,094
Recruits forwarded by superintendents of recruiting service at Philadelphia and Harrisburg	26,567
Drafted men and substitutes	10,651
Recruits for regular army	2,974
Re-enlistments of volunteers	17,876
	91,704
1865—Under call of December 19, for 300,000 for one year	2,657
Seventy-five companies of infantry, assigned to regiments in service	6,988
Forwarded by superintendents of volunteer recruiting service	9,133
Drafted men and substitutes	6,675
Recruits for regular army	387
	25,840

During the early years of the war the legislature passed several acts for regulating the military system, but none of them was of especially important character. The act of April 12, 1861, provided for the appointment of a grand staff to the commander-in-chief, and for other officers of rank made necessary by the exigencies of the war. The act of April 18 of the same year provided for the appointment of medical and other staff officers, and the act of May 15, following, authorized the appointment of a major-general to have command of all the militia forces of the State, and for the designation of not more than eight camps of instruction. The act of May 4, 1864, effected a practical reorganization of the militia, gave preference to volunteer companies in entering the service, provided for new organizations and their officers, and also authorized the establishment of State armories. This act was important in its character and effect, and while often modified by supplemental acts it was the foundation of the present militia system of the State.

General Lee's Headquarters

On Chambersburg turnpike, Seminary ridge, Gettysburg. Engraved especially for this work from a negative by W. H. Tipton

The first supplementary act was passed August 22, 1864, and provided for the organization of a military corps to be styled the "Pennsylvania State Guard," to comprise fifteen regiments of infantry, cavalry and artillery, to be armed, equipped and disciplined in the same manner as similar troops in the United States service; to be enlisted for not more than three years, and subject to military service in case of insurrection or to repel invasion. A further supplemental act passed August 24, 1864, provided that all officers of the State guard be chosen with reference to fitness and experience and from among the soldiers who had been in service under the national flag in the war then in progress.

The reorganization of the militia in accordance with the provisions of the act of May 4, 1864, and the supplemental acts of the same year proved a more difficult undertaking than the framers of the law had supposed. At that time the military resources of the State were severely taxed and the work of re-establishment was accompanied with many hardships. The original act contemplated a careful enrollment by the assessors and county commissioners of the names of all persons in their respective counties subject to military duty, including the names of members of military companies, and the transmission of their reports to the adjutant-general's department. The inspector-general was charged with the supervision of the enrollment, but that officer encountered many difficulties in carrying out the work of classification of the militia in conformity to the provisions of the act. In fact, in 1865 only two companies complied with the requirements and generally there was shown a disposition to ignore them on account of the hardships they imposed.

This condition of affairs prompted the inspector-general to report the situation to the commander-in-chief, and to state that it was idle to issue orders, and call upon the people voluntarily to submit to the burdens imposed by the act. He says: "The day of voluntary, gratuitous service for the State seems to have passed away forever, and the universal response to every proposition on the part of the public authorities is, what will it pay?" He also ventures the opinion that an expenditure of $100,000 will be necessary to accomplish an organization of the militia under the act, and suggests that if the State is to have a militia system at all, it should be an uniform one, well sustained by liberal appropriations for its organization and support. "The want of such a system," he continues, "and such teaching during the late war, resulted in measureless suffering, and inefficiency that not only cast a stigma on our reputation, but also subjected us to losses and expenses that would far more than have paid for the amplest preparation. Our laws on the subject are multitudinous, incongruous and inconsistent, and productive of trouble, expense and inutility. Year after year our militia acts have descended from bad to worse, until the very mention of the subject became a reproach and an invitation for mockery and scorn. The true remedy for all this will be found in a faithful and full revision of the whole matter, by competent and practical men, whose knowledge of military operations, gained by personal experience and observation, would enable them to build up a system suited to our wants and circumstances and honorable to the State."

The inspector-general concludes his remarkable communication with a recommendation that the legislature be asked to provide for the appointment of a committee authorized to prepare a law for the regulation of the militia, to take the place of all previous legislation on that subject, and "supply the void which now exists."

There is no doubt that at the time mentioned the militia system of the State was in a seriously disorganized condition, due in part to the exigencies of the war and in part to the multiplicity of laws previously adopted for the regulation of the military forces. The adjutant-general, also, appears to have shared in the views so freely expressed by his associate, and asked for more definite and practical laws for the reconstruction of the militia. Their appeals were heard, and immediate steps were taken toward reforming the system, but not until several years afterward did the legislature give the much-needed relief.

In itself the act of 1864 was elaborate in general plan and detail so far as it related to the reorganization of the militia, but, unfortunately, no provision was made for payment to persons who were affected by it, many of whom had previously served in the army. However, under its provisions the militia began to revive and independent companies were organized in various parts of the State, although without regularity in the matter of uniforms and equipment, except in the large cities. To command this force of more than three hundred companies of infantry and cavalry there were appointed no less than twenty-one major-generals, each with a large territory and comparatively few soldiers. The act continued in force until 1873, when the legislature limited the companies to two hundred in number, and provided a moderate allowance for compensation, repealing the militia tax imposed under the former act. In 1874 the number of major-generals was reduced to ten, and regimental organizations were established throughout the State.

In the meantime other important measures had been adopted, and in name at least the military establishment had begun to assume something of its present form. In 1870 (April 7) a further supplemental act provided that the militia of this Commonwealth shall hereafter be styled the "National Guard of Pennsylvania, and shall be subject at all times to the orders of their officers." The commander-in-chief was empowered to form the militia into divisions, brigades, regiments, battalions and companies, and to designate each by number or letter. Local military boards were authorized, to consist of three officers highest in rank in each county. Enlistments were to be for five years. In its effect the act of 1870 was elaborate in detail, but many of its provisions were modified by subsequent legislation.

In 1873 (April 15) a further supplemental act provided that in time of peace the aggregate national guard should not exceed

Hancock Avenue, Gettysburg, looking south to Round Tops

The scene of Pickett's charge, showing Bloody Angle, "high water mark of the Rebellion." Engraved especially for this work from a negative by W. H. Tipton

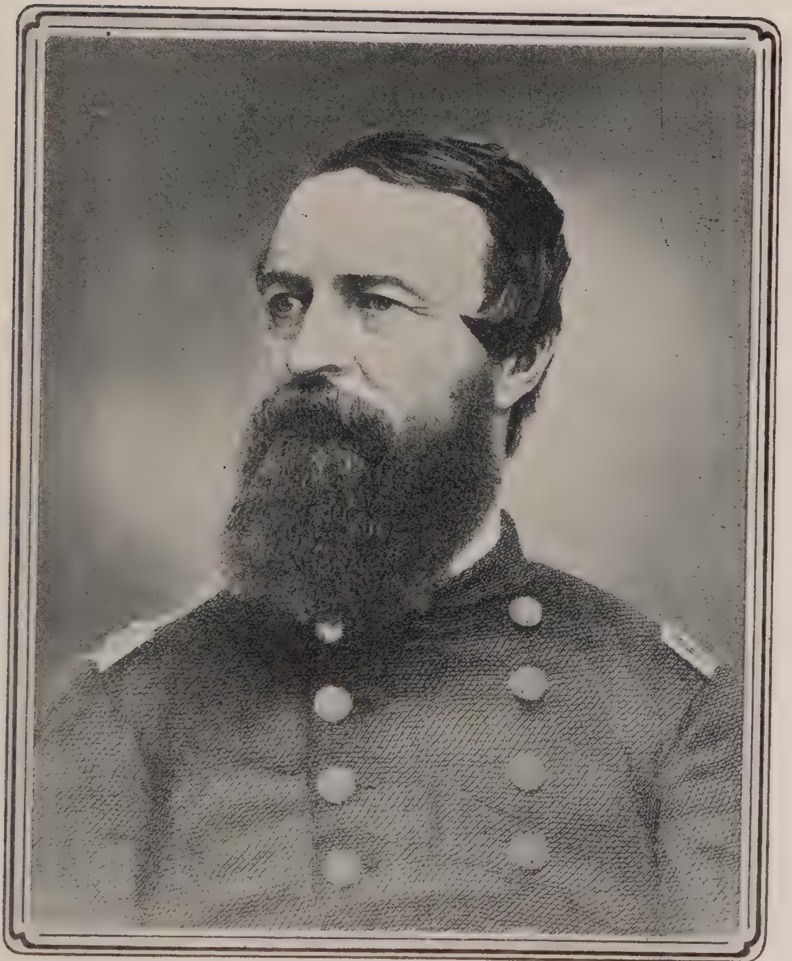
10,000 men of all ranks, and should consist of two hundred companies, fully armed, uniformed and equipped, to be distributed among the several military divisions of the State according to the taxable population. In general system and discipline the militia should conform to that of the United States army. It was specially provided that the act should not affect the right of certain military organizations in addition to the number of companies provided for, which were to be continued in existence. These were the First troop, Philadelphia city cavalry, Infantry corps of State Fencibles, Washington Infantry of Pittsburg, Artillery corps of Washington Grays, Infantry corps of National Guard of Philadelphia, Weccacoe Legion of Philadelphia, National Grays of Philadelphia, Ringgold Artillery of Reading, Duquesne Grays of Pittsburg, City Corps of Harrisburg, and the Titusville Citizens' Corps.

During the next five years the system advanced through various stages of progress, gradually assuming more definite and practical form. In 1878, under an act passed June 12, provision was made for a single major-general, five brigadier-generals, and, in time of peace, for an aggregate national guard of one hundred fifty companies of infantry, five of cavalry and five batteries of artillery, apportioned in such localities of the State as the necessities of the service might require. In carrying out the provisions of the act it became necessary to disband many existing companies, yet there was retained in service an aggregate of 9,108 men, 608 commissioned officers and 8,500 enlisted men. In this year the enrolled militia subject to military duty, exclusive of exemptions, aggregated 418,482 men.

In 1879 provision was made for the codification of the military laws, and in 1880 annual encampments and inspections by the adjutant-general and brigade inspectors were authorized. In 1887, by an act passed April 13, the military establishment of the State was thoroughly reorganized, and all laws enacted previous to 1881, so far as they affected the militia system, were repealed. The term of service for enlisted men was changed to three years, but generally the regulations then in force were retained. However, the act was important in that it re-enacted the essential features of previous laws and abolished those which were unnecessary and of imperfect character. In 1889 the naval battalion of the national guard was authorized, and in 1893 (June 10) an amendment to the act of 1887 provided for the organization of four companies of engineers and a signal corps of one company.

The act to constitute the naval battalion was passed April 26, 1889, and was the means of adding an important branch to the militia system of the State. By its terms the act authorized the formation of four additional companies to be designated the "Naval Battalion of the National Guard of Pennsylvania," and provision was made for its officers, uniforms and discipline. This law was repealed in 1893 and was superseded by a new act passed May 15, entitled "An act for the establishment and government of a State Naval Militia." This provided for the separate enrollment of all seafaring men of whatever calling or occupation, and all men engaged in the navigation of the rivers, lakes and other waters within the jurisdiction of the State; of all persons engaged in the construction of ships and crafts upon such waters; of ship owners, members of yacht clubs and other associations for aquatic pursuits; of all officers and former enlisted men of the United States navy, all subject to existing laws relating to the qualifications for and exemptions from military service in the national guard. It was provided that, in time of peace, there be no more than two battalions of naval national guard, and that when organized they should be known as the "Naval Force of the State of Pennsylvania," but in time of war for the defense of coasts, lakes and harbors the commander-in-chief was authorized to increase the force beyond the limit prescribed in the act.

In 1893 the forces of the national guard consisted of fifteen regiments, one battalion and four companies and one independent company of infantry, three companies of artillery, three com-



David Dixon Porter

Naval officer; author; took important part in Civil War; raised to rank of rear-admiral, 1862; vice-admiral, 1866; admiral, 1870

panies of cavalry, and one naval militia battalion of two divisions (each division equals one company of infantry) in the first brigade and one division in the second brigade. The military forces of the State comprised 680 commissioned officers and 7,932 enlisted men, an aggregate force of 8,612. In the same year the number of persons in the State subject to military duty was 790,451 men.

In 1898, soon after war with Spain was declared, President McKinley called on the governor of Pennsylvania for ten regiments of infantry and four batteries of artillery, or a total of 10,800 troops to serve for two years. On April 28, three days after the call, the entire division of national guard[1] reported for duty, ninety-nine per cent. of the total strength being present. The troops rendezvoused at Mt. Gretna, in Lebanon county. In the same year the several organizations of the national guard and naval force, except the Gray Invincibles (a separate company of infantry) and Division C of the naval force, entered the volunteer service of the United States. Several of these organizations were mustered out previous to December 1, 1898, and all the remaining force before November 30, 1899. In this connection it may be said that in 1898 the State national guard comprised 684 commissioned officers and 7,955 enlisted men. The number of persons subject to military duty, exclusive of exemptions, was 894,753. In 1899 the total force consisted of 866 commissioned officers and 9,869 enlisted men. The total enrollment under the militia laws was 895,949; exemptions claimed, 540; number of persons subject to military duty, 895,409.

The reorganization act of April 28, 1899, was a most important step in establishing the military system of the State on its present basis of efficiency, and was the first act of its character after that of April 13, 1887. It provided, first, that in the event of a call by the president of the United States for troops from this Commonwealth, the national guard should be preferred and used in all cases. It fixed the maximum of companies of infantry at 180 instead of 150; created a medical department with a surgeon-general as its chief officer; an inspector-general's, a judge advocate's, a quartermaster's, and a subsistence department; made provision for a retired list, and authorized the commander-in-chief to relieve from active duty and place on the list any officer of the national guard who shall have served continuously in one grade for fifteen years. It provided that copies of the act, and all subsequent laws relating to the national guard, should be codified and published by the adjutant-general, and be known as "The Military Code of Pennsylvania." The whole act was the result of careful preparation by competent officers, and was and is con-

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[1] At the outbreak of the war the national guard of the State consisted of fifteen regimental organizations (three regiments of ten companies and twelve of eight companies), one separate battalion and one separate company, a total of 131 companies of infantry. To meet the requirements of the occasion it was deemed best to reorganize the infantry branch so as to make twelve regiments of twelve companies each, and three brigades of four regiments each. More than 17,000 men of Pennsylvania served in State military organizations during the war.

Union Volunteer Refreshment Saloon

Washington avenue, Philadelphia. Reproduced for this work from a negative taken during war times and in possession of J. F. Sachse sidered an advance movement in the organization and administration of the national guard in the State.

As now established the national guard of Pennsylvania comprises 742 commissioned officers and 8,902 enlisted men. In all arms of the service there are one hundred and fifty-eight companies, divided as follows: one hundred and forty-nine of infantry, four of cavalry, three of artillery and two divisions of naval force. These companies are fully uniformed, armed and equipped and are equally apportioned among the several localities of the State. In 1902 the total number of enrolled militia in the State was 957,919; exemptions, 160; total number of persons subject to military duty, 957,759.

The succession of adjutant-generals in the State, with date of commission of each, is as follows:

Josiah Harman, 1793.
Peter Baynton, Feb. 27, 1799.
Richard Humpton, 1802.
Mahlon Dickerson, Jan. 1, 1805.
Thomas McKean, jr., July 23, 1808.
William Reed, Aug. 3, 1811.
William N. Irvine (actg.), July 6, 1813.
William Duncan, Sept. 20, 1813.
John M. Hyneman, Aug. 1, 1814.
Nathaniel B. Boileau (actg.), Mar. 21, 1816.
William N. Irvine, Oct. 1, 1816.
Robert Carr, Aug. 23, 1821.
George B. Porter, Aug. 4, 1824.
Simon Cameron, Aug. 19, 1829.
Samuel Power, May 3, 1830.
William Piper, Aug. 3, 1836.
James K. Morehead, Aug. 3, 1839.
Adam Diller, Aug. 12, 1839.
George W. Bowman, July 15, 1845.
William H. Irwin, Nov. 21, 1848.
James Keenan, Feb. 2, 1852.
George W. Bowman, Oct. 18, 1852.
Thomas J. Power, Oct. 25, 1856.
Edwin C. Wilson, Feb. 5, 1858.
Edward M. Biddle, April 17, 1861.
Alexander L. Russell, Jan. 9, 1862.
David B. McCreary, Oct. 11, 1867.
Alexander L. Russell Jan. 4, 1870.
James W. Latta, June 1, 1873.
Pressley N. Guthrie, Jan. 16, 1883.
Daniel H. Hastings, Jan. 18, 1887.
William McClelland, Jan. 20, 1891.
Alexander Krumbhaar (actg.), Feb. 8, 1892.
Walter W. Greenland, Mar. 8, 1892.
Thomas J. Stewart, Jan. 15, 1895.

CHAPTER VI.

INTERNAL IMPROVEMENTS

THE history of internal improvements in Pennsylvania naturally is divided into three successive periods: First, that of roads, turnpikes and highways; second, the canals; and third, the railroads. From the time the colony was founded and its legislative branch of government was established, every encouragement has been given to the public, corporate and individual enterprises which had for their ultimate end the improvement of the condition of the people and the development of natural resources in which our Commonwealth for more than a century has been known to abound.

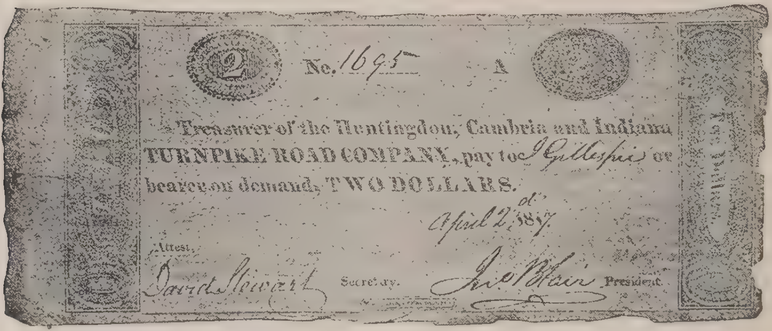
Neither William Penn nor any of his associates or followers had any thought that the vast territory, amounting almost to a principality, which came to him quite in the nature of a legacy, contained mineral wealth far beyond the comprehension of man, yet it was a part of the proprietor's plan to open means of communication with the interior regions of his domain that he and his fellows might enjoy closer association with those who chose to dwell in "the remote parts." And to the end that his people might have free intercourse with all parts of the province the governor, through his council, ordered that a certain portion of lands be set apart for roads, and that conveyances of titles contain "certain concessions" in the way of additional lands to be added for that purpose. This led to the establishment of roads, the principal of which between populous communities were known as

"King's highways," while those of less note were not specially designated by name.

But it appears that the immediate followers of Penn were not chiefly interested in the development of the interior localities of the province, beyond the extinguishment of the Indian titles, which was incumbent upon the proprietary, for they were chiefly tradesmen, content to dwell in the vicinity of their seat of government, and there to enjoy the blessings of peace and worship in accordance with their sense of duty and right. The Friends, living within their own environment, were progressive and thrifty and thoroughly honest in their daily walk, but being "under a tye not to bear arms," they were slow to defend their province against the inroads and machinations of the French, hence early efforts at systematic and permanent internal improvements were delayed until after the union of the States, and until after a legislature had superseded the colonial council and assembly of former years.

The period of roads and turnpikes began with the proprietary government and continued in a state almost of infancy until after the adoption of the State constitution, when the legislature took the matter under discussion and gave substantial aid to enterprises of the sort, and while the public finances would not permit large expenditures in that direction, reasonable appropriations were made in their behalf and corporate companies were treated with favorable consideration. This special movement in internal improvement enterprises began soon after 1789, and was continued on the part of the State government until the final sale of the system of public works in 1857; and by incorporated companies it has since continued to the present time. To-day turnpike and toll road companies are almost unheard of, and nearly all the thoroughfares of travel of that kind are under the supervision of the authorities of the respective counties of the State.

The era of navigable artificial canals in Pennsylvania actually began with the work undertaken by the Society for the Improvement of Roads and Canals, although suggestions looking to the same end were made as early as 1762. Canal construction was begun soon after 1790, and within the next few years the State gave material assistance to such enterprises. A little later, under pressure of public necessity, widespread demand and political influences, the State itself turned builder and succeeded in opening a navigable waterway from the Susquehanna river to Lake Erie, and by indirect route, with auxiliary railroad lines, joined the lake on the west with tide-water on the east. In this great undertaking there was expended more than $35,000,000 of public moneys, yet the end accomplished certainly justified the outlay, for of all early measures proposed for the development of the resources of our State in general, that which resulted in the construction of the public works, more frequently referred to as the State canal, was productive of the greatest benefit to all our people, regardless of residence or personal concerns. In earlier years Pennsylvania had kept even step with her sister States in public improvements, even under adverse conditions, but the completion of the system of canals within her borders gave her a certain prestige and placed her in the front rank of the progressive States of the Union. On



2 No. 1695 A

Treasurer of the Huntingdon, Cambria and Indiana TURNPIKE ROAD COMPANY, pay to J Gillespie or bearer on demand, TWO DOLLARS.

April 2d 1817

Attest,

David Stewart Secretary.

Jno Blair President.

Huntington, Cambria and Indiana Turnpike Shinplasters

Showing signature of John Blair, for whom Blair County was named final sale there was realized hardly a third of the actual cost of the public works, yet as a measure of progress and development the wisdom of the expenditure never has been doubted.

The period of canal construction was continued until about 1850, and during that time the territory of the State became well traversed with artificial water courses. To a large extent this means of travel and traffic has been superseded by modern railroads, but it is doubtful whether greater comparative prosperity has come with the new conditions. During the days of canals and turnpikes, all interests, even to those of the remotest country hamlets, were directly benefited by their operation, but after both were compelled to yield ascendency to the railroads the commercial centers and larger cities derived the greatest benefits, while the lesser towns and agricultural localities suffered corresponding loss.

As the old-time turnpike gave way to the canals as avenues of trade, so, in turn, the latter were compelled to yield supremacy to the steam railroads, after having been for many years engaged together in the carrying trade. As early as 1823 the first railroad was projected in this State, when the legislature authorized the construction of a road from Philadelphia to Columbia, to furnish the means of transportation which previously had been attempted by a canal company, but without success. Like its predecessor, the railroad enterprise also failed of accomplishment and its work was in part undertaken by the State in completing the line of public works from tidewater to the Susquehanna river.

The era of railroad enterprises began with the enabling act of 1823, and at the end of the year 1830 twenty-eight companies had been chartered for such undertakings in this State, and in 1831 eleven new companies were authorized to build railroads. In the course of time the legislature extended aid to several of these companies by subscription to shares of stock, but generally the policy of the State was against such proceedings, for at the time the Commonwealth itself was the builder and owner of two lines of railroad, one from Philadelphia to Columbia, and another across the Alleghanies from Hollidaysburg to Johnstown.

Soon after 1850 the State sought to dispose of its interest in the public works, and in conformity to legislative enactment the same were sold and the title vested in corporate companies. Having thus parted with its interest in transportation enterprises at about one-third their original cost, an act of the legislature prohibited the State from further similar investments, and also forbade the further extension of financial assistance to corporate enterprises by stock purchases. This appears to have been a prudent defensive measure, and by it the treasury of the Commonwealth was protected against the machinations of designing persons and constant applications from localities where railroads were asked for at the public expense. In 1853 it was found that the total appropriations by the State for internal improvements, from the adoption of the constitution to the year mentioned, aggregated more than $100,000,000, and it was believed that the time had arrived when each corporate enterprise should be able to maintain itself without charge upon the public funds, hence the act mentioned, which received the approval of every right-minded citizen of the State.

The claim cannot be made that Pennsylvania ever has been backward in promoting public improvement enterprises, or that the legislature has been niggardly in voting appropriations in their behalf, for such is not the case. First, the roads and turnpikes; next, the canals, and after them the railroads—all have received substantial assistance at the hands of the legislative power. In subsequent pages each of these subjects will be separately treated.

Roads and Turnpikes.—Any narrative which treats of the earliest roads in what is now Pennsylvania must be founded largely on tradition, and that this is at best an uncertain authority may be seen in the fact that not less than three localities in the eastern part of the State make claims to the first laid out thoroughfare of travel. The Swedes in visiting their scattered and meagre settlements journeyed chiefly by water, and after them the Dutch made use of any convenient means of travel without attempt to lay out highways,[1] for they were traders rather than colonizers. Then came the English settlers under the Duke of York's claim to title, and under his dominion the deputy governor and councillors were authorized to lay out and improve roads, one of which had its course from the locality of the Swedish and Dutch settlements below Philadelphia to New York. This is believed to have been the first regular thoroughfare in the region, and although its exact course and the date of laying out are now unknown, it led from Philadelphia to Morrisville and thence through Bristol. This was made a "King's highway" in 1677, and is mentioned by some writers as the "King's path." The Queen's road from Philadelphia to Chester was opened in 1706, the York road in 1711, the Doylestown and Easton road in 1722, and still another from Philadelphia to Lancaster in 1733. The list might be continued almost indefinitely, but however interesting the subject may be, as a matter of fact most of these ancient highways within the province were of small account in the proceedings of the proprietary government in establishing a system of internal improvements.

Under the Penn proprietary liberal provision was made for roads and highways, and five per cent. additional land was conveyed with each considerable tract for the purpose of highways. This practice was continued for a time and was entirely an act of generosity on the part of the proprietor. In 1686 the council received a petition relative to opening highways, but no definite action was taken other than to refer the matter to the County court, which body, says the record, "is assumed to have charge of such business." In 1700 the assembly passed an act which declared that King's highways shall be laid out by the governor and council, for the time being, and a record thereof kept in the council book; also that cartways and public roads be laid out by six "house-keepers," appointed by and held under the supervision of the justices of the County court. At the same time provision was made for the appointment of overseers of highways. The roads known as the King's highways were the principal avenues of travel between the important localities of the province, and were laid out of greater width and with more formality than the lesser roads, the latter being for the accommodation of inhabitants of scattered settlements.

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[1] Various publications, chiefly county histories, assume to furnish records of the "first roads," some of which are claimed to be the very first in their respective localities. Day's "Collections" speaks of the "Mine road," said to have been opened by the Dutch about 1616, extending from the Hudson river to the "Delaware Flats" in Monroe county. It was used in transporting copper ore from the Delaware river to the Dutch settlements in the Netherlands, and is said to have been the first good road in the country.

Although somewhat crude in regard to its provisions and imperfect in results accomplished, the law of 1700 was kept in force until after the adoption of the first constitution, and under it highways of travel and traffic were opened throughout the territory of the province. As settlement progressed and public interests became greater, the larger rivers and streams of the State were declared to be public highways. In 1771 the Delaware and Lehigh and parts of the Susquehanna and Juniata rivers, and several streams of less size, were made public highways. The Monongahela and Youghiogeny were added to the list in 1782, and later on almost every watercourse of sufficient size to float a flatboat or a raft of logs or lumber was likewise declared to be a public highway, and legislative enactments prohibited the obstruction of their channels or the diversion of their waters in restriction of traffic.

State roads first came into existence in Pennsylvania in 1785, when the legislature passed an act for laying out such a highway from the western part of Cumberland county to the town of Pittsburg, and for its construction appropriated £2,000 from the "import monies." The preamble to this act reads as follows: "Whereas, the making and maintaining of highways and roads between the several parts of this Commonwealth is of the greatest importance to the intercourse and commerce thereof, and to the due administration of justice therein, be it enacted," etc. So far as the records show, this was the first State road laid out and constructed at the general expense, but it was not the only effort in that direction. In the following year a similar thoroughfare was authorized to be opened between the northern inhabited parts of Northampton county and the settlement at Wyoming, on the Susquehanna river. In later years frequent applications were made for State roads, and several of them were constructed, resulting in the rapid settlement and development of the localities through which they were laid out. They were maintained at the public expense until the counties had become sufficiently populous to assume their care, upon which they lost their original character and gradually merged in the more modern system of county roads.

Fountain Inn

Near summit of mountains on old Philadelphia and Pittsburgh turnpike. Famous in old Portage road days and still standing. Engraved for this work from a negative by W. J. Hamor

In less than ten years after the first State road was authorized a new class of public highways was brought into existence. In

1792 an act was passed by the legislature to enable the governor to "incorporate a company for the making of an artificial road from the city of Philadelphia to the borough of Lancaster." At the time this was an important undertaking and somewhat experimental in character, in that it involved a large outlay of money on the part of its originators, while the returns in the way of tolls was wholly a matter of speculation. However, the legislature authorized the road, the governor incorporated the company, and after some delay the work of construction was completed. In the enabling act, in conformity to the law requiring a statement of the purpose and substance of a proposed measure, was a preamble which will be of interest in this connection: "Whereas, the great quantity of heavy articles of the growth and produce of the country, and of foreign goods, which are daily transported between the city of Philadelphia and the western counties of the State, requires an amendment of the highway, which can only be effected by artificial beds of stone and gravel, disposed in such manner as to prevent the wheels of carriages from cutting into the soil, the expenses whereof will be great, and it is reasonable that those who will enjoy the benefits of such highway should pay a compensation therefor, and there is reason to believe such highway will be undertaken by an association of citizens, if proper encouragement be given by the legislature," etc.

The incorporation of the Philadelphia and Lancaster turnpike company was the result of the above act, and the toll road[1] put in operation by it substantially followed the route of the King's highway, which originally was laid out in 1733. It was the first toll road in the State and the example set by its projectors was diligently followed in later years until the whole territory of Pennsylvania was as completely grid-ironed by highways of that class as it is now with steam railroads. Within twenty years next following the incorporation of the Philadelphia and Lancaster company about thirty similar enterprises were undertaken through chartered companies, and records show that in 1832 two hundred and twenty such corporations were in existence, although not all of them actually constructed the roads authorized by their charters. In all about three thousand miles of road were built, many of them being constructed with macadamized stone, and at one time there was an unbroken line of stoned turnpike extending westward from the Delaware river (at Trenton) to the Ohio State line, a distance of nearly three hundred and fifty miles. The Philadelphia and Lancaster road was begun in 1792 and was finished in 1794, at a total cost of about $465,000.

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[1] The act authorized the maintenance of toll gates and the collecting of tolls for each ten miles of road as follows: For every score of sheep or hogs, 1-8 of one dollar; for every horse and rider, or led horse, 1-16 of one dollar; for each sulky, chair or chaise, with one horse and two wheels, 1-8 of one dollar; for each chariot, coach, stage-wagon, phaeton or chaise with two horses and four wheels, 1-4 of one dollar; for either of the vehicles last mentioned, with four horses, 3-8 of one dollar; for every other carriage of pleasure, under whatever name, the like sums according to the number of wheels and horses; for each cart or wagon whose wheels do not exceed the breadth of 4 inches, 1-8 of one dollar for each horse drawing the same; for each cart or wagon whose wheels exceed the breadth of 4 inches, 1-16 of one dollar for each horse drawing the same; for each cart or wagon the breadth of

During the long period of their existence the toll roads served a useful purpose in attracting settlement to remote localities, and by them, both directly and indirectly, thousands of acres of lands have been brought into occupation and successful cultivation. Previous to the advent of railroads, they, with the old State roads, navigable rivers and canals, were the popular thoroughfares of travel and traffic, and it is a question whether agricultural pursuits were not then more prosperous than within the last forty years. The railroads have worked destruction among the toll road companies in this State, and of the many which once did a prosperous

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whose wheels shall be more than 7 inches and not more than 10 inches, 5 cents for each horse drawing the same; for each cart or wagon with wheels wider than 10 and not more than 12 inches, or being 10 inches shall not roll more than 15 inches, 3 cents for each horse drawing the same; for each cart or wagon the breadth of whose wheels shall be more than 12 inches, 2 cents for each horse drawing the same. Wagons and carts with wheels less than 4 inches wide were not permitted to pass along the road between Dec. 1 and May 1 following, nor at any time with a greater weight than two and one-half tons. Two oxen were estimated as equal to one horse in charging tolls.

business few remain in existence at the beginning of the twentieth century.

It is evident that the operation of the Philadelphia and Lancaster toll road was successful for its proprietors, as in the act (1794) incorporating the Lancaster and Susquehanna turnpike road company, whose line of road extended from Lancaster borough to the Susquehanna river, the preamble states as follows: "Whereas, the improvement of roads and highways is of the first importance to the interests of agriculture and commerce, and the rapid progress of the improvement of the road from Philadelphia to Lancaster evinces a laudable spirit of enterprise among the good people of this State, and affords a reasonable ground of expectation that an extension of the same westward may be effected, therefore be it enacted," etc. In 1796 two other turnpike roads were projected and incorporated; first, that of the Lancaster, Elizabethtown, Middletown and Harrisburg company, and second, that extending from a point on the Philadelphia and Lancaster turnpike near "Gap tavern," to Newport and Wilmington, in Delaware. In subsequent years similar acts became more frequent until the means of travel and transportation were furnished to the people of all settled portions of the State.[1]

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[1] Among the early turnpikes opened by incorporated companies, in addition to those mentioned, were the Germantown and Perkiomen, 1801; Cheltenham and Willow Grove, 1803; Chestnut Hill and Spring House, 1804; Philadelphia, Bristol and Morrisville, 1804; Philadelphia, Brandywine and New London, 1810; Perkiomen and Reading, 1811; Ridge, 1812; Spring House and Bethlehem, all in southeastern Pennsylvania. The York and Maryland line, 1807; Centre, 1808; Gettysburg and Petersburg, 1809; Gap and Newport, 1809; Chambersberg, 1812; Hanover and Carlisle, 1812; Little Conestoga, 1812; Danville, 1814; Chambersburg and Bedford, 1815; Harrisburg, Carlisle and Chambersburg, 1816; York and Gettysburg, 1818, all in the central and southern region of the state. The Susquehanna and Lehigh, begun 1804; Easton and Wilkesbarre, 1805; Coshocton and Great Bend, 1806; Milford and Owego, 1809; Bethany and Dingham's Choice, 1812; Bridgewater and Wilkesbarre, 1813; Bellmont and Easton, 1817; Susquehanna and Tioga, 1818, all in northern and northeastern Pennsylvania. The Erie and Waterford, begun 1807; Greensburg and Pittsburg, 1814; Bedford and Stoystown, 1815; Huntingdon, Cambria and Indiana, 1815; Stoystown and Greensburg, 1816; Mercer and Meadville, 1818; Susquehanna and Waterford, 1818; Pittsburg and New Alexandria, 1819, all in western Pennsylvania.

The National road, still occasionally referred to as the "old Government road," was one of the most important early internal improvements projected in the interests of the general government and the people of the States through which it was constructed. The road was built by the government, presumably at the general expense, but in part as the result of an agreement with the newly admitted State of Ohio, by which the latter agreed not to impose a tax within five years on United States lands sold in that State; and in consideration therefor the government promised to apply two per cent. of the proceeds of those sales toward the construction of a national highway. The work was begun on the line from Cumberland, Md., to Wheeling, W. Va., in 1806, but owing to the war of 1812 it was not completed until 1822, and then not fully according to the original plan, as four roads were projected and only one was built. In this State the road crossed the counties of Somerset, Fayette and Washington, and was a famous thoroughfare for emigrant travel in early days. It was abandoned

Conestoga Wagon

Reproduced especially for this work from a drawing by Darnley in possession of the Historical Society of Pennsylvania by the government in 1836, and for several years afterward was maintained by the States through which it passed, the tolls collected being used in making necessary repairs. Later on this State released its rights in the road to the counties, and it thenceforth was maintained as part of the common road system.

Incident to the establishment of State roads, turnpikes and county and town roads, the operation of mail and stage coaches formed an important element of early domestic life, and contributed largely to the prosperity of their time; and the arrival of the weekly and afterward tri-weekly stages with their loads of passengers and newspapers from the city was an occasion of much rejoicing in every hamlet and borough along the route. Generous hospitality always awaited the travel-worn passenger at the wayside tavern, and the papers furnished new subjects for discussion at the fireside and at the gathering places of the worthies of the town. The coming and going, too, of the heavy, lumbering wagon with its load of merchandise, drawn by teams of four and sometimes six horses, gave added interest to rural life, and likewise contributed to the profit of the farmers in the sale for ready cash of the surplus products of their lands. These were indeed the prosperous days of husbandry, and the foundations of thousands of comfortable fortunes were then laid by the thrifty tillers of the soil. With the advent of steam railroads a new and more speedy means of travel and transportation was provided, manufacturing interests were fostered, greater benefits accrued to the settled localities, but the day of prosperity of the stage coach and the freight wagon was at an end.

The opening of highways and turnpikes gave rise to the incorporation of bridge companies, although generally the turnpike companies built and maintained the bridges along the line of their own roads. It was the custom of early times to establish fording places across the smaller rivers and creeks, yet the first companies built bridges in case no safe fording place was found and a ferry could not be successfully operated.

Bridges were erected in Pennsylvania as early as 1786, in which year a "horse bridge" was built across Crum creek, near Chester, on the route of the King's highway. A drawbridge, undoubtedly the pioneer of its class, was built over the same stream in 1700. These structures were built at public expense, whereas the bridges built by incorporated companies were maintained by the tolls charged passengers for crossing them. As early as 1798, according to Hazard's Register, a bridge was built over the Schuylkill, on Market street in Philadelphia, and it is claimed that this was the "first great structure of its kind in America." It was of wood and cost $300,000, and while not the first bridge in the country, it was the first *great* bridge, and its successful construction at that time was regarded as little short of marvelous. It was the result of enterprise on the part of an incorporated company, and the example set was industriously followed until all the large streams of the State were spanned with substantial bridges.

Among the more important bridges built and owned by companies these may be recalled and mentioned (the year indicates date of incorporation): The bridge[1] across the Susquehanna river, four miles below Wrightsville, 1793; over the Delaware, at Easton, 1795; over the Lehigh, near Bethlehem, 1795; over the Schuylkill, at Market street, Philadelphia, 1798; over the Delaware, at Trenton, 1798; over the Susquehanna, at Wilkes-Barre, 1807; at Northumberland, 1809;[2] at Harrisburg, 1809; over the Monongahela, at Pittsburg, 1810; at Brownsville, 1810; over the Allegheny, at Pittsburg, 1810. At the Callowhill street crossing over the Schuylkill, in Philadelphia, in 1842, Charles Ellet built the first wire suspension bridge in the United States. It was 343 feet long, and 27 feet wide; cost, $50,000. It was torn down in 1874.

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[1] Compiled from "Pennsylvania and the Centennial Exposition," Vol. I.

[2] This bridge stood until June 28, 1863, when it was destroyed by order of Col. Frick to prevent the advance of the confederate forces, who then were at Wrightsville. It was of wood, one and one-fourth miles long and stood on 23 piers.

Canals.—The idea of establishing artificial water courses in Pennsylvania is said to have been suggested within a few years after the colony was planted, although nearly a century passed before any definite measures looking to that end were adopted. As early as 1761 an act was passed providing for the appointment of commissioners to improve the waters of the Schuylkill, but nothing was acomplished under the act, nor that of 1773, which provided for the same object. In 1762 a scheme of inland navigation was proposed, the purpose of which was to unite the Delaware river with the Ohio and Lake Erie, and to that end surveys were made for a canal between the Schuylkill and Susquehanna by way of Swatara and Tulpehocken creeks; but no substantial results followed, although the plan was looked upon as practicable and much interest appears to have been awakened in favor of the undertaking. At that time the people were recovering from the effects of the last French and English war, and almost before that was accomplished they were confronted with the more serious struggle for independence, hence all thought of extensive internal improvements in the province was dismissed. After the Revolution the subject was revived and a new spirit of progress was aroused through the efforts of the Society for Promoting the Im-

Old Cross Roads

On the State road between Philadelphia and Baltimore and famous in staging days. Engraved for this work from a negative by D. E. Brinton provement of Roads and Inland Navigation, an organization including in its membership many of the most influential and wealthy men of the State.

In the early part of 1791 the society presented to the legislature of Pennsylvania a memorial, setting forth the advantages to be derived from a system of inland navigation by utilizing the waters of the large rivers and connecting them with canals. The plan proposed was reasonably complete, and contemplated a system of navigable waters extending up the Susquehanna into New York State, to Lake Ontario, and even to the regions east of the Hudson river. In this grand scheme of development co-operation with the efforts of a similar society in New York was promised, and even a national association was suggested as having an earnest interest in the undertaking. In support of its arguments the society represented that in 1790 one hundred and fifty thousand bushels of grain had been brought down the Susquehanna and passed through Middletown on its way to market in Philadelphia; that the country bordering on the Juniata had furnished a considerable portion of this quantity, although the lands on that river were then in "an infant state of cultivation;" and, continues the memorial, "suppose them to be ever so well improved, the proportion they bear to the lands on the other branches of the Susquehanna is not more than one-fifth part."

The memorialists also represented that in 1788 large quantities of wheat and flour were carried up the river for the use of settlers in Northumberland county, but that since March, 1790, about 30,000 bushels of wheat had come to market from that county; and that should an easy inland communication be effected between the Schuylkill and Susquehanna, the whole produce of Cumberland and part of York county, as well as that of the upper valley regions, would cross the Susquehanna to Philadelphia markets.

The memorial was accompanied with reports of surveys of the proposed line of improvements, estimates of cost of construction, and a plan for carrying out the purposes of the originators. The proceedings were laid before the proper committees of both houses, and after mature deliberation the legislature took action, not, however, in accordance with the hopes of the society, but rather in the way of partial relief, in that incorporated companies[1] would be favored in the improvement of navigable waters in the vicinity of Philadelphia, and the gradual extension of artificial waterways into interior localities, when the settlements of the country and the finances of the State would permit such action. In the year 1761-2 the legislature appropriated £36,160 for the improvement of roads and rivers, and £14,333 for the same purpose in 1793.

Although the chief purpose of the society was not fully accomplished at this time much good resulted from its efforts. On September 29, 1791, the governor was authorized to incorporate a company for "opening a canal and lock navigation" between the Schuylkill and Susquehanna rivers, utilizing the waters of Swatara and Tulpehocken creeks. This company was incorporated under the name of Schuylkill and Susquehanna Navigation company. On April 10, 1792, the legislature authorized the incorporation of the Delaware and Schuylkill Navigation company, whose purpose was to open a canal from the Delaware river at Philadelphia to the Schuylkill at Norristown. This company made considerable progress and partially completed its canal from the bridge on Columbia avenue to the intersection of Broad and Vine streets before financial difficulties compelled a suspension of its work. The State railroad to Columbia was afterward built on the abandoned line, and the same now forms a part of the route of the Philadelphia and Reading road. Still later attempts to open canal navigation between the Delaware and Schuylkill rivers met with discouraging obstacles. The Southwark canal was projected and partially completed about 1830, and then was abandoned. The Conewago Canal company was incorporated in 1793 for the improvement of the Susquehanna river at and near Wright's Ferry, and for the construction of a canal around Conewago Falls. This undertaking was carried into actual operation, although subsequent individual enterprise had much to do with its ultimate success. It was for many years an important part of the internal improvements of the State, and traces of its abandoned works are yet to be seen in that locality.

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[1] Gordon's "Gazetteer" in 1831 states that forty-three canal and navigation companies had been incorporated previous to that year, and that of the entire number only seven completed the improvements authorized by their respective charters.

In the enterprises thus noted canal improvements in Pennsylvania had their actual beginning, and notwithstanding the difficulties which attended the work of construction, others of similar character were planned before the end of the century. In 1795 both pioneer companies were financially embarrassed, and for their relief the legislature authorized them to raise by lottery the additional sum of $400,000. In 1806 the State extended aid to the Schuylkill and Susquehanna Navigation company by the purchase of four hundred shares of its stock. These measures gave only temporary relief and work was suspended after about fifteen miles of canal were completed. In 1811 the companies were consolidated under the name of Union Canal company, and authority was given to extend its line to Lake Erie. The new company began work in 1821, and in 1827 opened for traffic a line of canal extending from Middletown on the Susquehanna to Reading, a distance of 77 2-3 miles. The improvement along the Schuylkill, originally contemplated by the Delaware and Schuylkill company, was made by the Schuylkill Navigation company.

In 1799 the legislature authorized the appointment of commissioners to ascertain the most practicable route of water communication between the Delaware river and Chesapeake Bay. This was followed by an act passed in 1801, incorporating the Delaware and Chesapeake Canal company. The Lehigh Navigation company was first incorporated in 1798 and was re-incorporated in 1813. The Susquehanna and Conewago Canal company was incorporated in 1813, the Schuylkill Navigation company in 1815, and the Lackawanna Navigation company in 1817. It may be said, however, that the early attempts to establish inland navigation were only partially successful, and it was not until several years afterward that the fullest hopes of canal promoters were realized. The events of the war of 1812 served as an object lesson in teaching the importance of systematic internal improvements, and statistics show that of the total cost of that war to the country ($160,000,000) fully one-half was expended for transportation of troops and army supplies. Every barrel of pork forwarded to the Canadian frontier cost eighty dollars, every barrel of flour fifty dollars, and in the transportation of cannon the cost thereof was twice that of manufacture. At the close of the war a number of prominent men urged upon the government the necessity of establishing a general system of artificial navigation extending throughout the thickly peopled States, and while they failed to secure their objects through the national congress, their appeals stimulated action on the part of corporate companies and

Canal near Old Portage Railroad

Showing both freight and passenger boats. Photographed especially for this work from an old print in possession of J. F. Sachse also led to the construction of trunk canals by several States. In this State the work was begun by incorporated companies about ten years before the legislature determined upon the construction of a canal and railroad line connecting its eastern and western waters.

The Schuylkill Navigation company, incorporated March 8, 1815, was the most successful enterprise of its kind to be projected and carried into operation previous to the construction of the so-called State canal. In 1826, eleven years after the act was passed, this company completed its canal along the Schuylkill from Philadelphia to Port Carbon (108¼ miles), and thus early established an important route of transportation from the Schuylkill coal fields to tide water. This canal has continued in operation, and since 1870 has been managed by the Philadelphia and Reading Railroad company as part of its carrying system. The portion now in operation extends from Port Clinton to Philadelphia, a distance of 89.88 miles. The outstanding capital stock of the company aggregates $3,962,250; its funded debt $8,494,872.86.

The Lehigh Navigation company was organized August 10, 1818, under authority of an act of the legislature entitled "An act to improve the navigation of the river Lehigh." The work of construction was at once begun, but in 1820 the company was consolidated with the Lehigh Coal company under the name of Lehigh Navigation and Coal company. In 1821 the name was changed to Lehigh Coal and Navigation company, as now known. Under the energetic action of its management the company succeeded in opening temporary navigation on the Lehigh in 1820, and large quantities of coal were shipped down the river to the Delaware and thence to Philadelphia. The boats at first were of small carrying capacity and down trips only were made for several years. The construction of a canal to take the place of the temporary river transportation was begun in 1827, and traffic was opened from Mauch Chunk to Easton in 1829; the extension from Easton to Bristol was completed in 1830. The line to White

Haven was opened in 1835, and to Stoddartsville in 1838. The total length of navigable water along the Lehigh was 84½ miles. In connection with the canal a railroad from White Haven to Wilkes-Barre, to connect with the North Branch canal, was begun. It was opened in 1840, and subsequently was extended east to Phillipsburg and west to Union Junction. In 1866 the company secured a lease of the Delaware Division canal, and in 1871 the entire property and franchise rights of the Lehigh Coal and Navigation company were leased to the Central Railroad of New Jersey. Thus for more than eighty years, under one management and another, the Lehigh Coal and Navigation company has been an important factor in the carrying trade in the State. The Navigation company's canal extends from Coal Port to Easton, 48 miles, and that of the Delaware Division canal, from Easton to Bristol, a distance of 69 miles. These companies are owned largely by Philadelphia capital, the outstanding stock of the navigation company amounting to $14,366,650, and that of the canal company, $1,633,350.

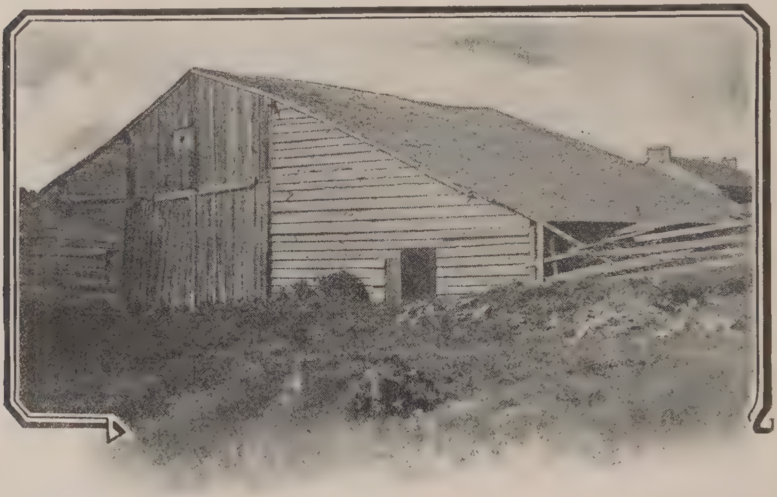
The Codorus Navigation company was organized under an act of the legislature in 1825, for the purpose of establishing slackwater and canal navigation on Codorus creek, from the Susquehanna river to York, a distance of eleven miles. The improvements were completed and comprised eight miles of slackwater and three miles of canal, but their operations were suspended many years ago.

The Conestoga Navigation company was incorporated in 1825 and was the outgrowth of the still older Conestoga Lock and Dam Navigation company, the latter having been organized in 1806 for the improvement of navigation on Conestoga river between Lancaster and Safe Harbor, a distance of nineteen miles. By the construction of a series of dams and locks the improvement was accomplished and good transportation facilities were provided, but in the course of time navigation was discontinued and the waters were utilized for manufacturing purposes.

The Delaware and Hudson Canal company was incorporated April 23, 1823, under the laws of New York, with authority to construct a navigable canal from Rondout on the Hudson river to the Pennsylvania line. In carrying out the plans of the company the legislative power of this State authorized the continuation of the canal from its southern terminus to Honesdale, in Wayne county, where it connects with a railroad, the latter extending into the rich anthracite coal fields of Luzerne county. The canal was completed in 1828, and for many years was an important factor in the industrial history of both New York and Pennsylvania.

The Susquehanna Canal company was chartered April 15, 1835, for the purpose of opening navigation from Columbia on the Susquehanna river to Havre de Grace, Md., a distance of forty-five miles. The work of construction was begun in 1835 and was completed in 1840, and with the opening of the line for traffic the system of public works established by the State was given navigable communication with Maryland ports. On January 2, 1872, this canal was leased to the Philadelphia and Reading Railroad company.

The Monongahela Navigation company was authorized in 1836 and was formally organized in 1837. Its object was to establish slackwater navigation on the Monongahela river from Pittsburg to the Virginia line, and thus carry into operation a plan of improvement which was originally proposed to the federal congress in 1824, as a part of a grand scheme of development of connecting navigable waters in Virginia, Pennsylvania and Ohio, and which, being declined by the government, was subsequently considered by the legislature of Pennsylvania as an essential part of the State public works, but with like ineffectual results. The company was granted a liberal charter, with a promise of State aid, and before its work was completed it received from that source the sum of $125,000 in subscriptions to its capital stock, while private contributions added $83,100 more to its funds. The improvement consisted in establishing a series of levels by means of dams in and across the river, but it was provided that canal construction should not be undertaken. The work was begun in 1837, but financial embarrassments and changes in management occasioned serious delays, and it was not until 1856 that navigation was opened, and even then not in accordance with the original plans of the projectors of the enterprise. But considering the difficulties encountered the company accomplished excellent results and by its line added to the transportation facilities in the southwestern portion of the State. The improvement of the Youghiogheny river, by which the waters of that stream were made navigable, was accomplished in 1851, and contributed greatly to the volume of business on the Monongahela for several years. The improvement consisted of a series of dams, similar to those on the Monongahela,



The Last of Old Portage Road Engine Houses which Remained Standing

It was situated at plane ten, and was torn down about 1900. Reproduced for this work from a negative by J. W. Bowman and was made by the Youghiogheny Navigation company. The dams were swept away by high water in 1865, and were not restored.

The Muncy Canal company was incorporated in 1848 for the purpose of constructing and operating a boat canal from the West Branch division of the State canal to the town of Muncy in Lycoming county. It was completed in 1848 and was operated until about the time the West Branch canal was abandoned.

The Pennsylvania Canal company was incorporated May 1, 1866, with an authorized capital of $5,000,000, for the purpose of acquiring and operating the system of canals owned by the Pennsylvania Railroad company. It was and still is auxiliary to the railroad company, although a separate and distinct organization. Under several acts of the legislature passed between 1855 and 1860, providing for the sale of the State public works, the Pennsylvania Railroad company purchased several divisions of the State canals and operated them as part of its carrying system until the organization of the Pennsylvania Canal company, when they were sold and transferred to it. Among the divisions sold were those along the Susquehanna river, except that part of the North Branch canal between Wilkes-Barre and the New York State line. The Eastern division, extending from Columbia to Duncan's Island, was purchased from the State in 1857; was sold to the Pennsylvania Coal company in 1867, and was finally abandoned in 1900. The Juniata division was disposed of in the same manner, but was abandoned in sections, the last one in 1899. The West Branch division, from Northumberland to Farrandsville, was likewise transferred, and subsequently was discontinued or sold by sections, the last remaining portion having been abandoned in 1891. The Wiconisco canal, from Duncan's Island to the mouth of Wiconisco creek, was transferred to the canal company in 1871, and was sold to the Northern Central Railway company in 1890. It has since been abandoned. The Susquehanna division was sold by the State to the Sunbury and Erie Railroad company in 1858, and in the same year passed into the ownership of the West Branch and Susquehanna Canal company. It was acquired by the Pennsylvania Canal company in 1874, and in 1889 was sold to the Philadelphia and Erie Railroad company, who abandoned the canal and replaced it with a railroad.

The Pennsylvania Canal company does not now operate a single mile of canal within the State, although it is the owner of valuable franchises and much land which was once used for canal purposes. The organization always has been maintained in its auxiliary relation to the Pennsylvania Railroad company, with principal offices in Philadelphia. Its capital stock outstanding amounts to $4,501,200, and its funded debt outstanding aggregates $2,282,000. The cost of the company's canal lines and property, including boats, was $6,409,839.21.

The Pennsylvania Canal.—The act authorizing the construction of the State public works was passed in 1826, but the movement which led to the ultimate determination on the part of the legislature had its inception in the plans suggested and urged upon the Commonwealth by the Society for the Improvement of Roads and Inland Navigation, to which reference has been made; and one authority states that the measure had its origin as far back as 1769, when it was proposed to establish a system of artificial waterways extending through New York, Pennsylvania, Maryland and Virginia, and in connection with which the legislature of this province ordered surveys of a route for inland communication between the eastern and western waters thereof. Nothing whatever was accomplished under the proposition of 1769, and even the endeavors of the society, in its internal improvement scheme proposed in 1790, were not rewarded with the success they deserved, owing largely to doubts as to the State's financial ability to carry out the work, and in a less degree to a lack of confidence in the enterprise on the part of the public.

After the war of 1812 the subject was revived and the measure found strong supporters in all parts of the State, particularly in the eastern and southern counties, while considerable opposition manifested itself in the localities which directly could derive no benefit from the proposed improvement. The period of discussion began about 1815 and for several years following the subject was constantly before the people in some form and frequently was made an important political issue. During this period the advocates of the canal labored faithfully and carried their work into every locality, sometimes in public meetings, but more generally in the distribution of canal literature, such as copies of addresses of men of known repute, the plans and estimates of engineers, and printed statements of those who were supposed to be schooled in matters of the kind. It was a season of canal education and one in which some feeling naturally was engendered, yet the advocates of progress never became disheartened and finally secured the sanction of their measure on the part of the public, and also secured in their favor a majority of the State legislature.

On March 27, 1824, an act of the legislature authorized the governor to appoint three commissioners for the purpose of promoting internal improvements in the State, and accordingly Jacob Holgate, James Clark and Charles Treziyulney were chosen to constitute the commission. In the course of time the commission made a report in favor of a "leading uninterrupted canal," to be made and owned by the Commonwealth, extending the whole length of the State, and so constructed that a boat loaded at Pittsburg could deliver its cargo on the wharves at Philadelphia. For the purposes of convenient management the route was proposed to be divided into four sections: Philadelphia to the Susquehanna river; from the east bank of the river to the upper fork of Frankstown branch of the Juniata; from the forks of the Juniata over Alleghany mountains to the forks of Little Conemaugh river; and thence to Pittsburg. The commissioners in their report recommended that the State establish a sinking fund, and make only one great primary canal, leaving to companies and individuals the construction of lateral canals. For the purpose of construction work it was recommended that the State borrow the sum of $3,000,000, in yearly loans of $500,000 each.

The legislature in 1825 repealed the act of the preceding year and passed a new act, which provided for the appointment of five canal commissioners (four additional commissioners were authorized under the act of 1826, but in 1830 the number was reduced to three), with power to consider and adopt such measures as were deemed proper for the establishment of navigable communication between the eastern and western waters of the State and Lake Erie. This act established the board of canal commissioners, under whose supervision the Pennsylvania canal and all its lateral

Section of Old Portage Road

As it appears to-day between Duncansville and Summit. Engraved for this work from a negative by J. F. Hammer branches was constructed. The act of 1824 constituted a temporary board for the purpose of ascertaining the most practicable route for a main line canal, but the act of 1825 established the commission as a department of State government, and also disclosed the legislative determination to carry into effect the great public enterprise long advocated by the leading men of the State.

The commissioners began their duties promptly and examined several proposed routes in an endeavor to establish navigable communication across the great ridge dividing the Susquehanna and Allegheny rivers, which was the chief obstacle that opposed the success of the undertaking. Of the routes examined four were surveyed and leveled, but in August, 1825, while the commissioners were busily engaged with their work of exploration, a convention of delegates representing forty-six counties was assembled in Harrisburg and declared in favor of the canal enterprise and called upon the legislature for an act authorizing the work of construction.

Upon the report of the commissioners, and agreeable to the sentiment expressed by the Harrisburg convention, the legislature, on February 25, 1826, passed "An act to provide for the commencement of a canal to be constructed at the expense of the State, and to be styled the *Pennsylvania Canal.*" The preamble to the enacting sections is as follows: "Whereas, the construction of a canal within our own limits for the purpose of connecting the eastern and western waters is believed to be practicable and within the means of the State, and its speedy completion will advance the prosperity and elevate the character of Pennsylvania, and by facilitating intercourse and promoting social interests will strengthen the bonds of the Union."

The act directed the canal commissioners to contract for the construction of a canal from Swatara creek to Juniata, from Pittsburg to Kiskiminitas, with a feeder from French creek to Conneaut lake, and to survey and locate the route of a canal from the point last mentioned to Lake Erie. On April 1 an act was passed to establish the Internal Improvement Fund, with the secretary of the commonwealth, auditor-general and state treasurer as commissioners thereof; and a further act of the same date authorized a loan of $300,000 with which to begin the work of construction. More definitely stated, the route of the State canal, as determined by the act, began at the Middletown terminus of the Union canal and extended thence to the mouth of Juniata river, and from Pittsburg to the mouth of the Kiskiminitas. This, however, was only the beginning of the enterprise, and there soon arose a demand for other branches until nearly every county had presented claims for consideration in that respect. Through selfish political connivance numerous other lines were suggested and urged, and had the demands of all claimants been gratified, canals or railroads would have been furnished to every locality of the State. As finally determined the principal canal divisions were constructed, and when completed the system became known as the public works. The work was begun in 1826 and the main line of canal and railroad from Philadelphia to Pittsburg was opened for traffic in 1834. The North Branch division, the last of the system, was opened in 1854, after a delay of more than two years. Each of these divisions is made the subject of mention in this chapter.

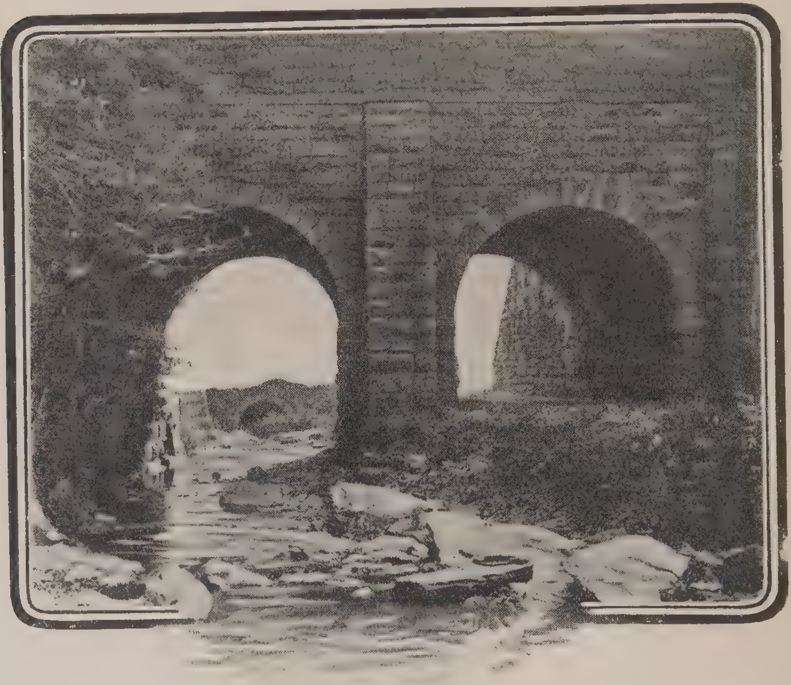
From the time the original surveys were made to the time when it was determined to sell the State public works, there had been expended for construction work and repairs the total sum of about $35,000,000. The skilled engineers and commissioners at the outset had calculated that the revenues in tolls received would maintain the system and in time be sufficient to repay the cost of construction, but this proved to be a mistaken belief. As an investment on the part of the State the enterprise was not directly profitable, but as the system of public works had the effect to promote traffic and intercourse between its eastern and western localities, to develop the resources of the entire territory, to advance settlements, to found prosperous industrial cities and boroughs, and thus add materially to the wealth of the people, the undertaking proved a grand success and far more than justified the outlay of public moneys.

The total length of the public works built and owned by the State was 907.39 miles, of which the canal lines comprised 789.95 miles, and the railroad lines, 117.44 miles. The commissioners' report for 1856 shows the length of each division as follows: Eastern division, 47 miles; Juniata division, 132 miles; Western division, 104 miles; Susquehanna division, 42 miles; West Branch division, 76 miles; North Branch division, 167.20 miles; Delaware division, 60 miles; Beaver division, 30.75 miles; Erie extension, 105.50 miles; Wiconisco canal, 12.50 miles; short lines, feeders, etc., 13 miles; Columbia railroad, 81 miles; Portage railroad, 36.44 miles.

The following table of financial statistics, taken from an authentic report of the canals owned by the State, shows the receipts and expenditures from 1830 to 1859:

Year	Receipts	Expenditures	Year	Receipts	Expenditures
1830	$25,748.68	$127,854.31	1846	$1,357,203.37	$694,505.12
1831	38,241.20	303,184.61	1847	1,587,995.61	690,575.95
1832	50,909.57	377,179.07	1848	1,550,555.03	996,592.70
1833	151,419.69	358,922.75	1849	1,628,860.13	951,249.03
1834	309,789.15	369,774.33	1850	1,713,848.16	1,488,799.74
1835	684,357.77	551,596.61	1851	1,719,788.54	1,823,709.92
1836	837,805.72	707,130.59	1852	1,938,574.43	2,224,379.53
1837	975,350.49	934,137.74	1853	1,893,246.50	2,755,936.64
1838	959,336.32	742,898.58	1854	1,918,606.30	2,294,357.43
1839	1,076,045.47	1,047,694.24	1855	1,942,376.71	1,838,791.18
1840	1,195,751.33	1,532,910.07	1856	2,006,015.66	1,943,896.82
1841	1,055,394.60	991,558.20	1857	1,308,598.62	1,312,705.67
1842	907,093.12	1,010,737.22	1858	95,070.06	202,665.62
1843	1,019,401.15	743,562.89	1859	4,411.78	2,659.77
1844	1,164,325.84	719,126.08			
1845	1,154,591.55	661,340.66	Total	$32,270,712.55	$30,400,433.07

Previous to 1850 the State had sold some of its minor branch canals to incorporated companies, but soon after that year it was thought best by those in official circles to make some disposition of the main line and lateral branches of the public works, although it was not expected that the sale would yield a revenue sufficient to cancel the canal debt, which then amounted to a considerable sum. An act of the legislature, passed April 27, 1854, authorized the sale of the main line, extending from Philadelphia to Pittsburg, but it was provided that no bid of less amount than ten million dollars be accepted. Evidently this was regarded by pros-



Double Culvert, New Portage Road

Showing single culvert of old road in the distance. These culverts are at the foot of plane eight, near where the old and new Portage roads crossed. Engraved for this work from a negative by Roy Geesey pective purchasers as an excessive sum, and in the next year (May 8, 1855) another act was passed and the minimum bid was fixed at seven and one-half million dollars. However, two years more passed before the sale was effected, but in 1857 the Pennsylvania Railroad company purchased the main line of canal and railroad and thereupon succeeded to all the rights and privileges previously exercised in connection therewith by the Commonwealth.

In the same year an amendment to the constitution prohibited the State from constructing any canal or railroad or having any interest in either as stockholder. The act of April 21, 1858, authorized the sale of the remaining portions of the public works to the Sunbury and Erie Railroad company for the consideration of three and one-half million dollars. This sale disposed of the State interest in the Susquehanna, West Branch, North Branch and Delaware divisions, which being accomplished the board of canal commissioners was abolished.

In this connection a brief account of the construction, operation and final disposition of the several divisions of the State public works will be of interest; and this interest naturally becomes greater when it is remembered that not one mile of the old Pennsylvania canal, which was brought into existence only after years of persevering effort and which was constructed at great expense to the State, is now in operation.

The Eastern division, extending from the western terminus of the Philadelphia and Columbia railroad at Columbia along the Suequehanna to Duncan's Island, where it joined with the Juniata and Susquehanna divisions, was begun July 4, 1826, and was opened for traffic throughout its entire length of 47 miles in 1830. It was the first section of the State public works to be constructed, and for the next quarter of a century was an important branch of the system. It was sold to the Pennsylvania Railroad company in 1857, and in 1867 passed into the hands of the Pennsylvania Canal company, by whom it was operated until 1900, and then was abandoned. The first cost of this division was $1,737,236.97.

The Wiconisco canal, an important auxiliary to the Eastern division, although it was in itself an independent branch of the general system, was begun by the State in 1838 and was designed to furnish transportation facilities from the coal regions of northern Dauphin county to the main line canal. The canal was a little more than twelve miles long, and extended from Duncan's Island along the Susquehanna to the mouth of Wiconisco creek, where it formed a junction with the Lykens Valley railroad, the latter leading direct to the coal fields and being under the control of an incorporated company. The work of construction was discontinued after the expenditure of more than $300,000. In 1845 (March 13) the State transferred its interest in the branch to the Wiconisco Canal company, on condition that the work be completed and navigation be established, which was accomplished in due season. In 1871 the Pennsylvania Canal company succeeded to the ownership and operated the canal until 1890, when it was sold to the Northern Central Railroad company. It was soon afterward abandoned.

The Western division, extending from the terminus of the Allegheny Portage railroad at Johnstown to Pittsburg and Allegheny City by way of the Conemaugh, Kiskiminitas and Allegheny rivers, was begun in 1826, and was fully completed and opened for navigation December 10, 1830. Its length was 104 miles. To furnish an ample supply of water for the upper sections of this canal, a reservoir covering 465 acres of land was constructed between 1840 and 1851. It was located two miles from the Portage railroad and ten miles from Johnstown. The Western division canal with its appurtenances cost $3,096,522.30. It was sold in 1857 to the Pennsylvania Railroad company, but was soon abandoned, the upper part first and the lower sections in 1864.

In connection with the Western division mention may be made of the so-called Allegheny feeder, the construction of which was begun in 1838, and which was designed to answer the purpose of a navigable canal and also to supply water to the less elevated

Western division on the main line. It was fourteen miles long and extended from Freeport, at the mouth of the Kiskiminitas, to Kittanning.

The Susquehanna division, on which work was started in 1827, began at Duncan's Island, where it formed a connection with the Juniata and Eastern divisions. From thence its course lay along the Susquehanna to Northumberland, where it connected with the divisions extending along the North and West branches of the river. The canal was completed and opened in 1830, was 42 miles in length and was built at a cost of $897,-160.52. It was sold in 1858 to the Sunbury and Erie Railroad company, and in the same year was transferred to the Susquehanna and West Branch Canal company. In October, 1874, it passed into the control of the Pennsylvania Canal company, and in 1889 to the Philadelphia and Erie Railroad company, under whom it was abandoned.

The Juniata division, one of the longest as well as one of the most extensive branches of the State public works, was begun in 1827, and was completed throughout its entire length of 132 miles in 1834. It began at the Duncan's Island connection with the Eastern and Susquehanna divisions and thence extended up the Juniata to Hollidaysburg, where it formed a connection with the Portage railroad across the Alleghany mountains. This division was made navigable from Susquehanna river to Lewistown in 1829; to Huntingdon in 1830, and to Hollidaysburg in the latter part of 1833, but was not opened until the next year. In connection with the operation of this division it became necessary to construct an extensive dam and reservoir on the south branch of Juniata river, a work which was not contemplated in the original plans. This improvement was begun in 1839, and after several delays was finally completed in 1847. The dam was thirty feet high and nearly three thousand feet long, and the reservoir covered four hundred and fifty acres of land. The total cost of construction work on this division, including the dam and reservoir, was $3,570,016.29. The entire division was sold to the Pennsylvania Railroad company in 1857, and subsequently was transferred to the Pennsylvania Canal company. It was finally abandoned in 1899.

The Erie extension of the State public works, the division from which the very best results were hoped for, proved to be the source of much annoyance to the commissioners and engineers, and was found to be an expensive undertaking. It began at the Beaver connection, above New Castle, from which point its course lay up the Shenango, passing near Conneaut lake, through Crawford county, and along Conneaut creek a considerable distance, and thence across to Erie and the lake. Its entire length was 105½ miles. The work of construction was begun in 1827, attention being given first to the French Creek feeder and afterward to the canal proper; but numerous obstacles opposed the progress of the builders, and in 1834 only a small portion of the division was ready for navigation. The feeder branch was seriously damaged by high water in 1837 and was not again repaired during the State

Lancaster

Showing old Court House in the distance. From Day's Historical Collections ownership. In 1843 the feeder, together with the Shenango and Conneaut sections of the division, passed into the control of the Erie Canal company, by whom the work was completed in December, 1844. The company operated the line from Erie to Beaver until September, 1870, and then was succeeded by the Erie and Pittsburg Railroad company. The canal was not navigated after the latter part of 1871. The cost to the State of the Erie extension, with the French Creek feeder (21 miles long), and the Franklin branch (22¼ miles long), was $3,721,056.86.

The West Branch division, from its connection with the North Branch and Susquehanna divisions at Northumberland, extended through the West Branch valley to Farrandsville, a small town a few miles above Lock Haven. Work on this line was begun in 1828, navigation was opened as far as Muncie in 1830, but not until 1838 was the entire line opened for traffic. The Lewisburg connection was completed in November, 1833, and the "side cut" to Bald Eagle creek in 1834. In 1838 provision was made for an extension of this division a distance of thirty-three miles to the mouth of Sinnemahoning creek, but after an expenditure of more than $140,000 the work was abandoned. The expense to the State of the West Branch division and its auxiliary branches aggregated $1,389,099. In 1858 the division was sold by the Commonwealth to the Sunbury and Erie Railroad company and in the same year passed under control of the Susquehanna and West Branch company, who, in 1873, transferred its property and franchise rights to the Pennsylvania Canal company. It was afterward sold in sections and the remaining portion was abandoned in 1891.

The North Branch division was in many respects one of the most important branches of the State canal, as it formed the link which united the inland navigable waters of Pennsylvania with those of New York, and provided the ready means of transportation which was suggested previous to 1800 by the Society for Promoting Internal Improvements. The North Branch canal, as it was generally known, began at Northumberland and thence extended along the Susquehanna to the New York State line. At that point it formed a connection with the junction canal leading to Elmira, thence to and down Seneca lake, and finally, by means of a short branch, united with the Erie canal. Although not a part of the main line of the State public works, the North Branch canal was its most important auxiliary, and during its active operation was productive of grand results in promoting trade between the people of both States and in developing the resources of the country along its route. To a considerable extent it replaced river traffic with a safer means of transportation, and in exchange for the products of manufacture in the Eastern States it supplied these localities with coal for all purposes. The work of construction on this division was begun at Berwick in 1828 and the canal was opened for traffic as far as Nanticoke Falls in September, 1831. The Wyoming extension to Pittston, 17 miles, was completed in 1834. The Tioga line, which completed the connection with the New York canals, was begun in 1836. The branch from Pittston to Athens was begun in 1836, but the work was discontinued in 1841. The Tunkhannock line was begun in 1838. The North Branch Canal company was incorporated in 1843 and acquired from the legislature the unfinished part of the canal line between the Lackawanna river and the State line, but through its failure to comply with the conditions of transfer, the State resumed control in 1848. Although the entire division and its various extensions were presumably completed in 1853, navigation was not opened until November, 1856, when the *Tonawanda* passed up the canal from Pittston bound for Elmira with a cargo of coal. The total cost of the North Branch division was $1,598,379.35. It was sold in 1858 to the Sunbury and Erie Railroad company, and by the latter to the North Branch Canal company. In the same year the line from Northumberland was transferred to the Wyoming Canal company, and in 1869 passed under the management of the Pennsylvania Canal company, and by whom it was abandoned with other portions of its system, as before mentioned. In 1865 the branch from Wilkes-Barre to the New York State line was transferred to the Pennsylvania and New York Canal and Railroad company, and its use for canal purposes was discontinued in 1872.

The Delaware division extended from Bristol to Easton, along the Delaware river, a distance of sixty miles. It did not form a part of the connecting system of canals built and operated by the State, but was a continuation of the Lehigh Coal and Navigation company's line from Easton to the Delaware, at Bristol. It acquired added importance, in that it became the connecting link between the Lehigh company's canal and the Delaware and Raritan canal across New Jersey, and thus furnished transportation facilities from the coal regions to New York city over that route, as well as to Philadelphia by way of the Delaware. The work of construction on the division was begun in 1830, and in 1832 the line was opened for navigation. Its cost, when entirely finished, was $1,384,606.96. In 1858, with several other branches of the public works, the Delaware division was sold to the Sunbury and Erie Railroad company, who in the same year conveyed it to the Delaware Division Canal company. In 1866 it was leased to the Lehigh Coal and Navigation company, and in 1871 passed under control of the Central Railroad of New Jersey, by whom it was subsequently operated. This is the only division of the entire canal system constructed by the State which is now in operation.

The Beaver division canal began at the mouth of Beaver river and extended thence up that stream and the Shenango to a point six miles above New Castle, where it formed a connection with the Erie extension. It was begun in 1831 and was finished in 1834 (May 28). Its length was 30¾ miles and its cost was $760,148.48. In 1840, by the construction of the Pennsylvania and Ohio canal, the Beaver division furnished the connection between the canal system of this State and Ohio, and thus became an important avenue of transportation. It may be stated, however, that the Beaver division had no direct artificial connection with the other canal lines (except the Erie extension) of the State, but from its southern terminus at the mouth of Beaver river boats were transported up and down the Ohio between that point and Pittsburg. This means of communication was ample and river traffic was only interrupted by occasional high water. On January 1, 1845, the State transferred the Beaver division to the Erie Canal company, and under that management it was operated until the line was finally abandoned in 1871.

Samuel Vaughan Merrick

Founder Franklin Institute, 1824; first president Pennsylvania Railroad company. Reproduced especially for this work from a negative by Gutekunst

The Columbia railroad and the Alleghany Portage railroad were important branches of the public works, and as such deserve mention in this place. They were constructed for the purpose of carrying out the internal improvement enterprises undertaken in pursuance of the acts of the legislature referred to in preceding paragraphs, and were operated as railroads for the reason that the region through which they passed was of such character that successful canal operation was impossible. Previous attempts to establish navigable waterways between the Delaware at Philadelphia and the Schuylkill had taught the State engineers that further efforts in that direction would likewise be unsuccessful, and it was therefore determined to connect the canal system and tide water by means of a horse power railroad, on the proposed line of the old Delaware and Schuylkill canal as far as the Schuylkill, and thence to Columbia, there to form a connection with the Eastern division canal.

The Philadelphia and Columbia railroad, eighty-one miles long, was begun in 1828, was finished in 1834, and thereby the city of Pittsburg was given direct artificial communication with Philadelphia and the navigable waters on the eastern boundary of Pennsylvania. As first built, the road began at Broad and Willow streets in Philadelphia and followed the general course of the present Philadelphia and Reading company's road as far as Belmont Station, on the Schuylkill, a distance of four miles; thence its course lay over the hill, with a total rise of one hundred and eighty-seven feet. From White Hall station to Columbia its line is marked by the present general route of the Pennsylvania company's road between these points.

The completion of the road was regarded as a triumph of engineering skill, and the formal opening was an occasion of general rejoicing. Travel and transportation by safe and reasonably expeditious means were assured and obstacles apparently insurmountable had been overcome. The Delaware and the Schuylkill at last were united, and even the distant Susquehanna was levied upon to contribute its constantly increasing volume of products to Philadelphia markets. At first the road was operated with horse power and drivers, and transportation companies owned their own cars, paying toll to the collectors along the route. This custom occasioned much inconvenience, but it was continued until the use of locomotives was made possible by changing the course of the road to avoid steep grades. The State supplied locomotive[1] power in 1834 (June 28), but its use did not become general until 1836.

In connection with the history of the Philadelphia and Columbia railroad[2] there may be noted a number of events of more than ordinary interest. The first locomotives used wood for fuel in generating steam, but in some of them anthracite coal was successfully used as early as 1838. Bituminous coal was first used for the same purpose in 1839. In 1846 the old strap rails were replaced with T rails, and in 1850 a telegraph line was established. In 1856 the State entered into a contract with the Pennsylvania Railroad company to carry passengers and freight over the road for five years, but in the following year, in carrying out the act providing for the sale of the public works, the lessee company became absolute owner of the line. The cost to the State of the Philadelphia and Columbia railroad was $4,791,548.91.

The Alleghany Portage railroad, connecting the Eastern and Western divisions of the State public works, extended from Hollidaysburg on the east to Johnstown on the west slope of the Alleghany mountains, a total distance of 36.44 miles. In design, construction and subsequent operation, this road was a novel affair, and comprised a series of levels, inclined plains and hoisting arrangements, yet when completed it served the purpose for which it was intended and by it loaded cars and canal boats were safely transported over the mountains in either direction. According to published reports there were ten inclined planes, up which cars were drawn by stationary engines; four viaducts, and one tunnel, nine hundred feet long, nineteen feet high and twenty feet wide. In the highest part the road attained an altitude of 2,326 feet above tide water.

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[1] One authority states that the first locomotive used on the road was the *Black Hawk*, of English make, and that it made trips in 1831 between Lancaster and Columbia. The *Lancaster*, built by M. W. Baldwin of Philadelphia, began running in 1834, and its success (the *Black Hawk* proved a failure) resulted in an order from the State for twelve locomotives, six from M. W. Baldwin, four from Robert Stephenson, of England, and two from Coleman Sellers & Sons, of Philadelphia. In 1836 the *George Washington* was put on the road by the Norris Locomotive Works of Philadelphia, and was the first engine to climb the heavy grades without difficulty.

[2] The Gettysburg extension of the Columbia road was begun in 1836 by an incorporated company, but after about thirty miles were graded the work was discontinued. The company intended to build the road from Wrightsville, opposite Columbia, to Gettysburg, but the State proposed to extend the line farther south. To a certain extent the extension was a part of the public works.

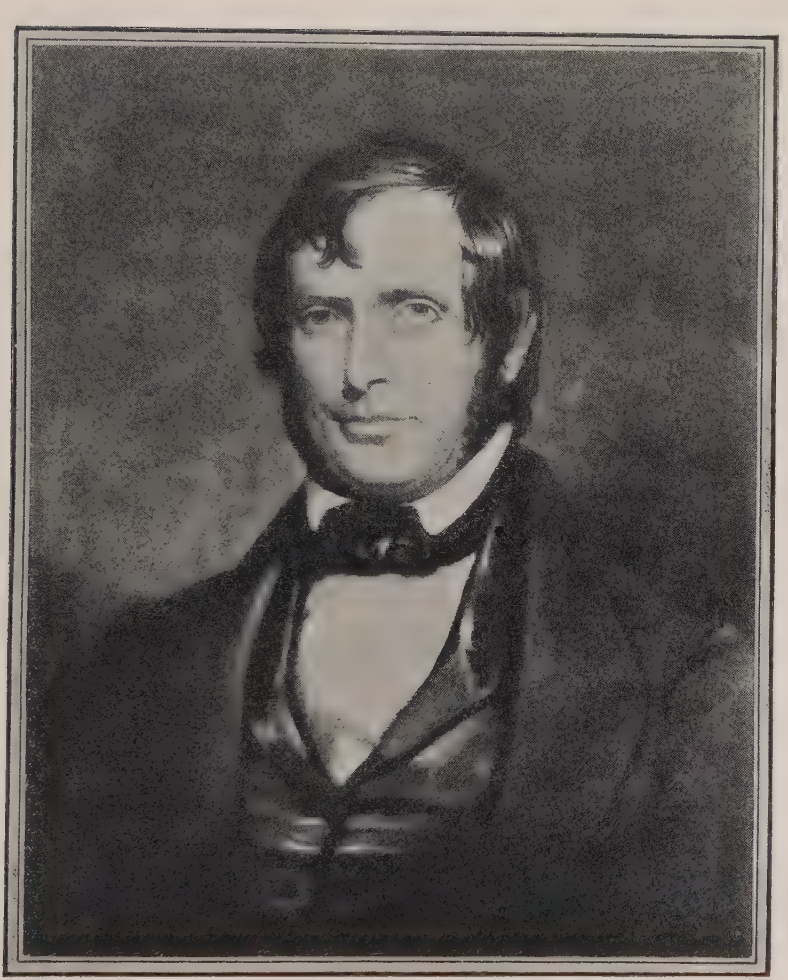
The Portage railroad, as it was commonly known, was the result of the engineering genius of Sylvester Welch, who also was largely instrumental in constructing other portions of the State public works. The road was begun in April, 1831, and in 1833 (Nov. 20) the first cars passed over the line, drawn by horses, as the hoisting apparatus was not then in place. The second track was laid in 1835. The first locomotive, the *Boston,* so called after the city in which it was built, ran on the Johnstown level of the road in 1834, and was the first railway locomotive east of the Alleghanies in this State. It was soon followed by others, each with a distinguishing name, and among them there may be recalled the *Conemaugh,* otherwise known as the *Coffee Pot,* and also the *United States,* both primitive specimens when compared with the ponderous engines that now transport trains over the modern road through Blair's Gap, where the Portage road was laid out.

The first Portage railroad cost the State nearly two million dollars, and it was operated for about fifteen years, when the work of constructing a new and better road was begun. It was completed in 1855, upon which the old road, with its series of levels and planes, was abandoned. The new improvement cost a little more than $2,100,000. The line was sold to the Pennsylvania Railroad company in 1857, and such parts thereof as were not required for the purchasing company's use were permanently abandoned.

Railroads.—Railroading, which is now recognized as one of the most important elements of industrial and commercial life in our great Commonwealth, had its beginning in the early years of the last century, and that beginning was as crude, imperfect and as humble as that which marked the early history of any other of the great enterprises that attained the perfection of development with the dawn of the twentieth century.

The American railroad in its inception was a necessity born of the rapid progress of development during the years following the close of the second war with Great Britain, and was borrowed in its earliest stages from the mother country; but then, as now, the American people proved themselves only temporary borrowers and soon began to build upon their own ideas, with the result that in the construction of railroads and locomotives and cars for transportation of freight and passengers, and in the operation of large railroad enterprises, the United States soon gained an enviable prominence, and instead of borrowing from other countries American inventors builded entirely for their own systems and began to send abroad the products of their native genius; and thus it is that to-day in the construction of railroads and their equipment, and in the operation of these great thoroughfares of travel and transportation the United States leads the world—and supplies a goodly portion of it with the production of its factories. In the accomplishment of this grand work Pennsylvania was almost a pioneer and for many years has been a chief controlling factor.

Originally railroads were called tramroads and are known to have been used in England as early as 1730, at Newcastle-on-Tyne, for the convenient transportation of coal from the mines to places of shipment. These primitive roads bore little resemblance to the railroads of half a century ago, rude and undeveloped as the latter were at that time, and no resemblance whatever to the modern railroad of the present day. They at first consisted of strong parallel wooden rails, resting on sleepers, and the latter on the firm earth, and there was no thought then of grades and



Francis Rawn Shunk

Clerk of State Legislature; secretary Board of Canal Commissioners 1836-1838; secretary of state 1838; governor 1845-1848

curves, overcome and adjusted with engineering skill, for the tramroad of early days covered only short distances and no attempt was made to surmount grades, that being a later step in the grand evolution of scientific railroading. Horse power, too, for many years was used in transporting freight, and it was not until 1769 that steam power was applied to the moving of vehicles on tramroads, although a carriage propelled by steam power was invented and used in Paris in 1763.

Soon after the construction of tramroads the builders, in order to render more durable the parallel wooden rails, began to protect their tops with straps of iron, and in 1738 some enterprising genius produced a rail made wholly of iron—an iron rail—from which was derived the name railroad. A recent writer on the subject has said that these rails were cast, and to prevent the wheels of the cars from running off the track a flange was cast on the outside of the rails, but afterward was changed to the inside. Flanges on the wheels of cars were first used in 1789, and have been continued to the present time. Cast rails in short lengths of three or four feet were continued in use until 1820, when machinery was invented for rolling rails in suitable forms and of greater lengths. The first public railway for the "Surrey Iron Tramroad" was authorized by act of Parliament in 1801, and this is believed to have been the pioneer of its kind.

Although tramroads were in frequent use in England and other European countries during the eighteenth century, it was not until 1801 that experiments of that character were tried on this side of the Atlantic; and if accounts are true, our own State of Pennsylvania had the honor of pioneership in this work of development when Thomas Leiper set up in the yard of the once famous Bull's Head tavern, on Third street, above Callowhill, in Philadelphia, a tramroad twenty-one yards long, with a grade of one and one-half inches to the yard, and succeeded in hauling up its entire length a car loaded with 10,696 pounds of material, using one horse as motive power. The success of this experiment demonstrated the feasibility of constructing a similar road as a substitute for the proposed canal between Philadelphia and Columbia, for the latter undertaking had failed of success and it had become necessary to devise some other convenient and less expensive means of transportation between those points. Ultimately the road was built and was operated by the State, horse power being used until 1834, when locomotives were purchased for the line. The history of the Philadelphia and Columbia railroad will be found elsewhere in this chapter.

In 1809 a second tramroad, sixty yards long, four foot gauge, was built for Mr. Leiper by John Thomson (father of J. Edgar Thomson, formerly president of the Pennsylvania Railroad company), a civil engineer, and so gratifying were the results of this second experiment that Mr. Leiper soon afterward built a similar road from his stone quarries on Crum creek, in Delaware county, to his boat landing on Ridley creek, a distance of one mile. This primitive road, like its predecessors, was operated with horse power, and was in use nineteen years, until after railroads of greater strength were brought into existence, and until after locomotives came into use as motive power in transporting loaded cars. In 1818 a similar road was built at Bear creek furnace, in Armstrong county, and was used for transporting ores and iron products in that locality. In the course of the next few years, it having become known that roads of this character afforded cheap and expeditious means of transportation, several others were constructed and put into operation. The dates of building and the localities in which they were operated are not essential to this chapter, but as the first step toward the construction of modern railroads mention of some of them is proper. The tramroad led to the railroad, and the use of horse power in moving cars led to the subsequent introduction of the steam engine. Each had its place in the evolution of the modern railroad, and a century ago the tramroad was to the people of that age a thing of as much importance as is the present railroad to those of our own time.

One of the most important of these old-time roads was that built in the early part of 1827 at Mauch Chunk, for the transportation of coal from the Lehigh Coal and Navigation company's mines to the Lehigh river, a distance of nine miles, with four miles of siding. Gordon's Gazetteer for 1832 describes the road as follows: "The railway is of timber, about 20 feet long, 4 inches by 5 (each piece), and set in cross pieces made of cloven trees placed 3½ feet from each other and secured by wedges. The rail is shod on the upper and inner edge with a flat bar of iron 2¼ inches wide and ⅝ of an inch thick." Loaded cars descended it by gravity and were drawn back empty by mules. These roads, however, were built for the transportation of freight, ores and other products of the mines, and were not intended or used for the conveyance of passengers or the general transaction of business as we now understand the purpose of railroads. They were for private and corporate use and were not common carriers as that term is now used.

With all the conveniences of the thoroughly equipped modern railroads of the twentieth century, with their numerous and swiftly moving trains of cars, we are prone to regard the old primitive tramroad as of little consequence in the history of railroad enterprises in this State, yet it must be understood that the present conditions of elegance and comfort in travel are the direct outgrowth and the natural successors in an age of progress to the little, crude affairs with which enterprising men experimented and struggled less than a century ago. The tramroad with its cars drawn by horses was sufficient for its time and fulfilled its mission but in the course of a few years there came a demand for more rapid transportation of freight and passengers than either the tramroad or the canals could furnish; and it became necessary, too, to provide for more extended lines of road, and for the carrying of freight and passengers up grades, over mountains and across considerable streams. This great work meant increased expenditures, the incorporation of heavily capitalized companies, and, above all, the services of men of energy, brains and courage; it meant that the slow horse on the tramroad or on the canal packet must be displaced by stronger and more rapid means of propulsion; it meant that the structure which would safely sustain one or two small loaded cars must be replaced with a roadbed of sufficient strength to support the weight of a steam locomotive and a train of twenty or more heavily loaded cars; and it meant, in short, that the old system of transportation must be entirely revolutionized and superseded. The locomotive then had been recently invented and was in use in England and elsewhere on the other side of the Atlantic, and commercial interests in the United States again looked abroad in the hope of borrowing another idea for temporary purposes. And to Pennsylvania is accorded the honor of having the first locomotive operated on a railroad in this country.

According to accepted authority the locomotive on rails was first used in Wales, in 1804, but its weight and strength were not sufficient to draw loaded trains up grade. In 1822, after eight years of experimental work, George Stephenson overcame the difficulties formerly experienced and invented an engine with power enough to surmount moderate (what now would be called slight) grades and draw a limited number of cars. But America could not await the slow process of English experiment and bought one of the locomotives in 1829. It was put in operation on the railroad connecting the Delaware and Hudson canal with the mines at Carbondale. This road was begun in 1826 and was completed in 1829. The locomotive was built in Stourbridge, England, and was called "Stourbridge Lion." It proved too heavy for the road, hence was used only a short time, the fault being not with the machine itself, but with the road, which was light in construction and not calculated to withstand the heavy pressure to which it was subjected.

Notwithstanding the doubtful success which attended the experimental use of the Stourbridge Lion, that result did not discourage further attempts in the same direction, but it did have the effect to stimulate American genius in the work of building locomotives on this side of the Atlantic. In 1829 the South Carolina Railroad company determined to equip its road with engines of American build, and to that end procured a locomotive to be constructed in New York city. It was put in service in the fall of 1830, and was the first locomotive built in this country for regular transportation purposes. It was appropriately named "Best Friend of Charleston." The second American engine was built in West Point, after plans of Horatio Allen, and was put into commission in 1831. The third engine, the famous old "DeWitt Clinton" of historic memory, was the product of the same shop, an improvement upon the model of its predecessor, and was put into service August 9, 1831, by the Mohawk and Hudson Railroad company,

William Freame Johnston

District attorney Armstrong County; member both branches State Legislature; speaker State Senate 1847; governor 1848-1852 and was run between Albany and Schenectady, in New York State. It weighed three and one-half tons and could run thirty miles per hour under favorable conditions.

Although Pennsylvania was the first State in which a locomotive was used, the physical characteristics of the land surface were such that the free use of locomotive power was for the time considered impracticable; but it was not long before our enterprising capitalists set about the work of devising means to overcome the apparently insurmountable obstacles and prepare the way for opening lines of transportation and travel by rail across the Alleghanies and the great rivers. At that time, too, the men of energy who were willing to invest in railroad enterprises were embarrassed and in a measure opposed by the influences that most favored the construction of the system of canals which the State itself was then building. The legislative mind seemed bent upon the accomplishment of this work, and as almost every legislator hoped for an extension of the canal into his own district, and was laboring to that end, neither the legislative body nor its individual members were much inclined to favor railroad building by incorporated companies, and still less inclined to aid such undertakings with appropriations from the public funds.

In connection with the principal work of constructing the Pennsylvania canal it became necessary to build two lines of railroad, one from Philadelphia to Columbia on the Susquehanna river, and another across the Alleghany mountains. This great highway of traffic was designed to cross the State from east to west and traversed its richest and most thickly populated region. Naturally a railroad would have followed the same general course, hence would have been regarded as a competing enterprise and one which, if carried into operation, would have taken business from the State system of canals. Thus it was that railroad enterprises were compelled to await the time when it became necessary to sell the system of public works and supersede the old slow highways of traffic with the modern and more efficient railroad.

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But in the face of these embarrassments Pennsylvania was not slow in following the example of other States in railroad building. The first effective act to incorporate a railroad company was passed March 31, 1823, and authorized John Stevens and his associates to build and operate a line of railroad from Philadelphia to Columbia. The company, however, did little toward the construction of its road, and the work ultimately was completed by the State and was operated as a part of its system of public works. At the end of the year 1830 charters had been granted to twenty-eight railroad companies, and in 1831 eleven others were incorporated and authorized to build railroads. One of the more prominent of these was the old Philadelphia, Germantown and Norristown railroad, of which five miles were completed in 1832. In 1836, according to the Canal Commissioners' report, the following railroads were completed and in operation: Mauch Chunk, nine miles; West Chester, nine miles; Room Run, five and one-fourth miles; Philadelphia, Germantown and Norristown, twenty-one miles; Mine Hill and Schuylkill Haven, twenty miles; Mount Carbon, seven miles; Lykens Valley, sixteen and one-half miles; Little Schuylkill, twenty-one and one-half miles; Schuylkill Valley, ten miles; Mill Creek, four miles; Pine Grove, four miles; Carbondale, sixteen and one-fourth miles; Philadelphia and Trenton, twenty-six and one-fourth miles; Beaver Meadow, twenty-six and one-half miles.

It is doubtful if a single one of these roads is now in operation under its original name and charter, yet many of them are still in existence and form parts of the great systems of railroad enterprises for which Pennsylvania is noted. In the year mentioned, according to the Commissioners' reports, the State railroads then completed were as follows: The Philadelphia and Columbia, eighty-two miles; and the Portage railroad, thirty-six miles. In the same year the railroads in course of construction by incorporated companies were: The Reading and Port Clinton, twenty miles; Philadelphia and Reading, fifty-four miles; Philadelphia and Wilmington, seventeen miles; Catawissa and Tamaqua, thirty-eight and one-half miles; Sunbury and Pottsville (including branch road), fifty-one and one-half miles; Williamsport and Elmira, seventy-three and one-half miles (six and three-fourths miles being in New York State); Lancaster and Harrisburg, thirty-six miles; Harrisburg and Chambersburg, fifty miles; Downington and Norristown, twenty miles; Marietta and Columbia, three miles; and the Strasburg road, five miles.

It will be seen from what is stated above that in 1836 there were completed and in operation within the State three hundred and fourteen and one-fourth miles of railroad, of which one hundred and ninety-six and one-fourth miles were owned by incorporated companies and one hundred and eighteen miles by the State; and that at the same time there were in course of construction by eleven distinct companies three hundred and sixty-eight and one-half miles of road. The entire mileage of road at that time, finished and in course of construction, aggregated six hundred and eighty-two and three-fourths miles, and represented the interests of the State and twenty-five separate companies.

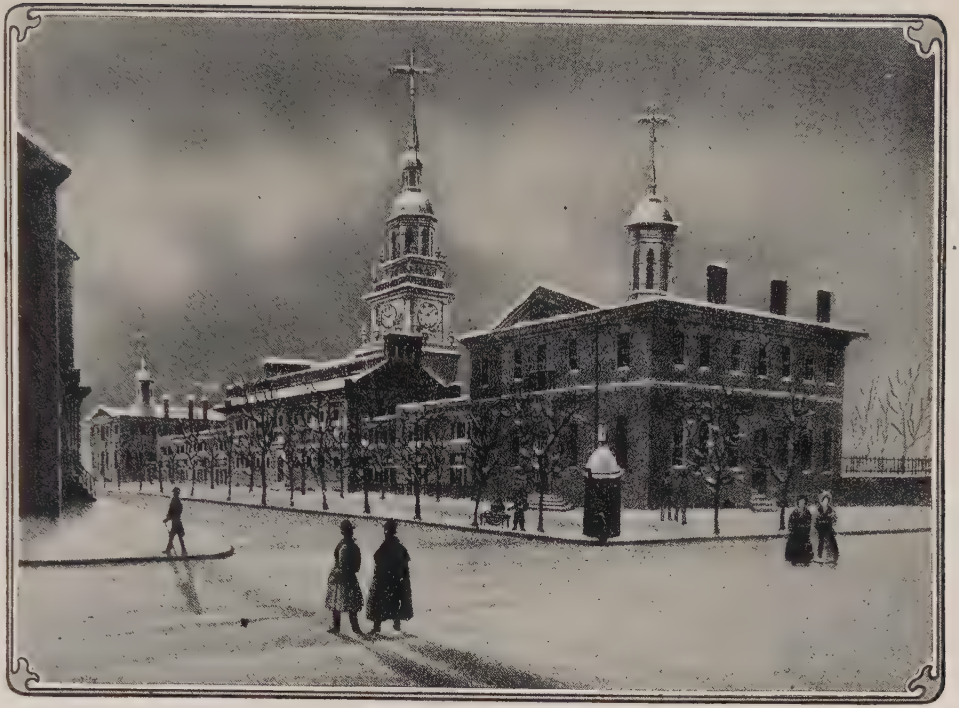
It may be said, however, that far more companies were incorporated than in fact built the roads they intended to operate, and many of them fell by the wayside after the preliminary surveys were made and their directors had ascertained the actual cost of construction. Many charters also were granted to companies whose managing officers never intended to build roads, but who interested themselves in such enterprises for purposes of speculation, hoping to dispose of their franchises to other corporations at good profit. The tendency in this direction at one time became alarmingly great and at last created a feeling of prejudice against all enterprises of that character, to the injury of several whose purposes were wholly commendable. Frequently the State extended aid to railroad corporations and made generous subscriptions to their capital stock. Little benefit ever accrued to the Commonwealth through this practice, although by it many companies were enabled to complete a work which otherwise would have ended in disaster. But at length this practice led to abuses of legislative power and resulted in an amendment to the constitution in 1857, forbidding the State from having any interest whatever in any canal or railroad. This was after the sale of the State public works, in which there had been expended about thirty-five millions of public moneys, while there was realized from the sale of the entire system hardly one-third of that sum.

The pamphlet laws of Pennsylvania from about 1826 to 1860, a period of about thirty-five years, show the granting of charters to hundreds of railroad companies, and of the entire number of corporations thus created about half actually built their projected roads and carried them into operation. Governor Porter, whose administration began in 1838 and ended in 1845, was the warm friend of railroad enterprises, and recommended State aid to such of them as he deemed worthy of assistance. He advocated the construction of a railroad from Pittsburg west to the Mississippi river, thus forming a continuous route of transportation from Philadelphia to Pittsburg by way of the main line of combined State canals and railroads, and from the city last mentioned westward across the great States of Ohio, Indiana and Illinois. His suggestions at the time (in his first message in 1838) were ridiculed in certain quarters, yet he lived to witness the realization of his hopes and expectation, for he was even then confident that the great work would be carried out.

The era of railroad building in Pennsylvania began in earnest soon after 1835 and was prosecuted with vigor for a period of about thirty-five years, until nearly every accessible locality in the State which promised some return to the operating company was given the benefits of ready transportation for freight and passengers. The accomplishment of this great work cost many millions of dollars, and not infrequently townships, municipalities and counties helped to bear the expense of construction, for which they received no direct return, but it is doubtful if any railroad ever was built in this State that did not directly benefit the people of the locality along its route. It proved the great factor in developing the latent resources of the State, in opening new agricultural districts and affording an outlet for marketable products of the farm, in promoting mining and manufacturing enterprises, in setting in motion the machinery of hundreds of factories, in increasing municipal importance, population and mercantile interests, and in gaining for our Commonwealth the enviable prominence it has since enjoyed in being among the most progressive States in the whole country.

In January, 1833, there was turned out from the shop of M. W. Baldwin in Philadelphia the first locomotive constructed within the State, and one of the best and most serviceable engines of its kind in the United States. So gratifying indeed were the results of this first product of the shop that other orders taxed its capacity for manufacture and necessitated an enlargement of the works and the formation of a stock company, which took the name now known throughout the industrial world as the Baldwin Locomotive Works, one of Philadelphia's largest manufacturing enterprises. In the course of time railroad construction shops were started in other cities, and to-day Pennsylvania produces everything necessary for use in the construction and equipment of railroads, from the steel rail to the final completion of the most costly parlor car; and the factories of the State do produce them and send them to railroads throughout the United States and also to foreign countries.

During the last quarter of a century many and wonderful changes have been made in the method of operating railroads, and of the hundreds of short-line roads once in existence few indeed retain their identity and appear by name in the reports of the Secretary of Internal Affairs. The work of consolidation began more than forty years ago and was prosecuted energetically until almost a multitude of short lines were brought under a single management. The great Pennsylvania Railroad company operates more



Independence Hall as it appeared in 1840

From an old print

than 3,750 miles of track, exclusive of that of its auxiliary the Pennsylvania Company, and represents more than one hundred lesser lines, which it controls either by ownership, lease, contract or trackage rights. The Philadelphia and Reading Railway company operates more than one thousand miles of track, and its system represents more than thirty lesser lines of road. The Pennsylvania Company operates about fourteen hundred miles of track, and comprises the consolidation of thirty lesser roads. The Lehigh Valley system includes more than fifty minor lines and branches, and operates nearly fourteen hundred miles of track.

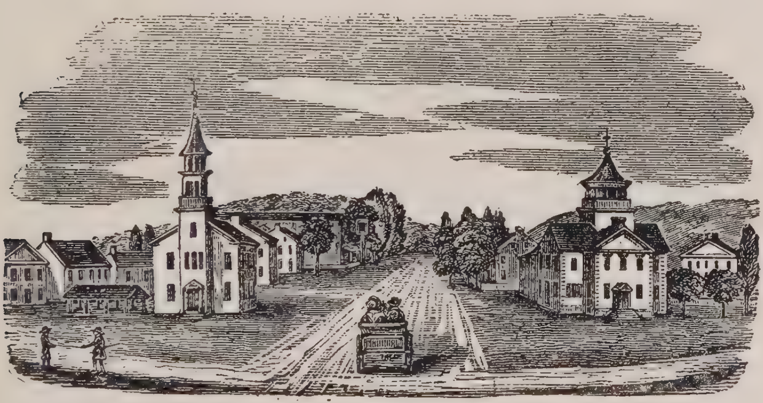
During the current year 1900-01 more than three hundred separate railroad corporations doing business within this State made reports to the Secretary of Internal Affairs, but that number by no means represents the total number of railroad companies whose charters are still in force, nor does it correctly represent the total of all the companies that actually operate lines of road. Under the requirements reports are received from companies whose lines are leased to some one of the great systems or are operated by them under contract or have trackage rights over them. Many companies also make reports and are foreign corporations whose lines of road touch and cross some part of this State.

The last quarter of a century has witnessed a complete revolution of the railroad systems of this State and of the whole United States, and the modern equipment of the twentieth century road bears no resemblance whatever to that of forty years ago. The consolidation of lesser lines into one continuous line, and the association of all of them under a single management, led to the establishment of the trunk lines, and the gradual extension of the latter in all directions, both within and outside the State, with the completion of harmonious running schedules on main and branch lines, led to the establishment of what now is known as the railroad system, of which Pennsylvania has one of the most extensive and perfectly operated on the American continent, and also one of the best in the world. The accomplishment of this grand result has been the work of many years and has called for the untiring effort of men of brains, courage and perseverance.

As is elsewhere stated, in 1836 the total mileage of all the railroads within this State was 314¼ miles, or about one-fourth of the aggregate mileage of all the roads in the United States. In 1846 the total length of all the railroads in the State had increased to 840 miles, or a little less than one-sixth of the aggregate mileage of the country. The next thirty years, from 1846 to 1876, constituted an era of remarkable progress in railroad extension throughout the land, and the close of the last mentioned year found the aggregate mileage of the railroads in the United States to be 77,470 miles, and in Pennsylvania 5,983 miles. In 1901 the aggregate mileage of all railroads in the United States, according to the most recent data, was 193,345.78, the State of Illinois standing first and Pennsylvania second. The total mileage of roads operated by corporations doing business in Pennsylvania was 26,975.86, of which total 10,697.68 miles of road were within the limits of the State. In 1901 there was laid in the State 101.67 miles of new track; the aggregate of all tracks, including yard tracks, sidings, spurs, etc., was 50,464.87 miles.

Few persons other than those intimately acquainted with methods and management of steam railroads have any adequate understanding of the extent and magnitude of the principal trunk lines which now cross our State in every direction, reaching through their main or connecting roads into every county except Fulton. But among the hundreds of separate railroad corporations doing business within the State, comparatively few are to be denominated trunk lines, and a still less number are entitled to the higher designation of systems. In the early history of railroading trunk lines and systems were unknown expressions, and may be regarded as products of the last twenty-five years; the results of consolidations, mergers, long leases, processes of law, and the acquisition and union of lesser lines and interests into the management of a single greater corporation. Of some of the principal of these roads it is proposed to make mention, with the object of showing something of their history and generally their extent in length, volume of business, cost, capital, and whatever may be of interest to the reader, as information concerning them is disclosed in published records.

Of the five great systems of railroad now in operation in Pennsylvania three are distinctively domestic corporations, and the others organizations under the laws of other States. Naturally, the State corporations are entitled to first mention in these pages, and in the order of seniority.



Public Square in Wilkes-Barre

From a print issued about 1840

The Philadelphia and Reading Railway company was organized under a charter dated April 4, 1833, and was authorized to construct and operate a line of railroad from Philadelphia to Reading, a distance of fifty-four miles. Soon after the completion of the road the company began to extend its line by the construction of branches and the acquisition of franchises of other and less prosperous corporations, and it eventually became recognized as the leading road of the eastern part of the State, and one of the most extensive coal carrying roads in the country. As years passed the company continued to extend its operations, drawing within its management other lines, and establishing itself among the important railroad systems of the East. It now operates 1,002.90 miles of track, of which 951.21 miles are within this State. The total capitalization under the reorganization of 1896 amounts to $96,945,115, of which $20,000,000 represents the capital stock, and $67,683,952 the bonded indebtedness. Its assets aggregate $98,513,290, of which $80,582,838 represents the cost of the road and equipment, $4,198,959 current assets and cash, and $13,731,493 all other assets. In the transaction of its business the company employs 878 locomotives, 803 passenger cars, 34,189 freight cars, and 951 cars devoted to its own service, a total of 35,943 cars. The number of employees during the year 1900-01 was 17,884, and the compensation paid them amounted to $10,529,795; number of passengers carried, 22,697,295; total revenue from passenger service, $4,561,393; tons of freight transported, 30,077,465; total revenue from freight service, $22,470,735; total earnings from all sources, including income, $28,379,179; operating expenses, $15,742,920; other expenses, $12,069,638; total expenses, $27,812,558. The business management of the company is conducted in principal offices in Philadelphia, in which city the directors and officers are nearly all resident. The stock is owned largely in the same city and in New York, with blocks of less amounts in various other localities.

The Lehigh Valley Railroad company was incorporated April 23, 1846, under the name of Delaware, Lehigh, Schuylkill and Susquehanna Railroad company, and was reincoroprated under its present name January 7, 1853. Its original purpose was to build and operate a steam railroad from Phillipsburg, N. J., to Wilkes-Barre, in this State, a distance of one hundred and one miles, and that part of the road was completed in October, 1855. The work of extension and absorption of other lines was begun in 1872 and has since been carried forward with such energy that the present system includes fifty-four lines, covering a total of 1,387.38 miles of track. The company always has maintained a progressive policy and its business has been conducted on an elaborate although not extravagant scale. Its officers, past and present, have been men of known integrity and excellent capacity for the work entrusted to their charge. The cities of New York and Philadelphia are well represented in the officiary, and in those cities large blocks of the stock are owned. From the reports of 1900-01 these interesting facts relating to the business of the company are taken: Total capitalization, $100,140,403 (capital stock outstanding, $40,411,100; bonded indebtedness, $46,975,000; other liabilities, $12,724,303); total assets, $98,962,144 (cost of road, $18,639,292; equipment, $19,018,420; other assets, $16,913,617). In conducting its business the company employs 763 locomotives, 473 passenger cars, 34,889 freight cars, and 1,087 cars in its own service; total, 36,449 cars. During the year there were employed 17,576 persons, to whom wages were paid amounting to $9,338,924; total number of passengers carried, 4,456,732; revenues from passenger traffic, $3,460,528; tons of freight carried, 3,540,600 from products of agriculture, 540,323 from products of animals, 10,541,980 from products of the mines, 703,245 from products of the forests, 1,849,225 from products of the manufactories, 232,185 of merchandise, and 1,103,505 tons of miscellaneous shipments; total tonnage carried, 18,511,063; revenue from freight service, $19,729,363; other earnings from operation, $1,082,423; total earnings from all sources, including income, $25,454,050. From these receipts there was disbursed for operating expenses $19,383,846, classified as follows: $4,241,717 for maintenance and construction, $4,448,244 for equipment, $9,958,739 for transportation, and $735,146 for general expenses. In addition there was paid out for other expenses $7,210,019, making the total expenditures $26,593,865, an amount exceeding the total revenues by $1,139,815. During the year there were thirteen accidents to passengers, none of which were fatal. Of the employes, forty-five were killed and one hundred and forty-two injured; of other persons, sixty-eight were killed and seventy-three were injured; total, 113 fatal and 228 non-fatal accidents.

The Pennsylvania Railroad company, the most important carrier system in Pennsylvania and in the East, and one of the most extensive in the entire country, was brought into existence by an act of the legislature of Pennsylvania, passed and approved April 13, 1846, and was organized March 20, 1847, letters patent having been issued February 15 of that year. The first election of directors was held March 30, 1847. Under its charter the company was authorized to construct, equip and operate a line of steam railroad to connect with the then known Harrisburg, Portsmouth, Mount Joy and Lancaster railroad, and to run to Pittsburg or to any other point in Allegheny county, or to Erie, in Erie county, as its management might deem expedient. But the incorporation and charter for the proposed Pennsylvania railroad were not secured without opposition, as it was understood that the operation thereof would in a measure draw from the revenues upon which the State system of public works largely depended for support. This was undoubtedly true, but the charter was granted and the work of construction was carried forward with such vigor that in 1850 portions of the line were completed and ready for operation. The leading capitalists of Philadelphia and Pittsburg had subscribed liberally to the stock of the company and from the beginning the enterprise was well backed with ample funds and equally valuable influence. Hardly had the original road been opened for traffic before the company began to extend its lines and enlarge the field of its operations. A detail of each of the subsequent acquisitions is not necessary (it would require a volume to fully narrate all of them) to this chapter, but that which proved of the greatest benefit to the public, and to the company itself, was the purchase of the main line of public works, which vested ownership of that part of the combined State canal and railroad in the corporation, thus relieving the State of a burdensome property, and at the same time

William Morris Meredith

Member State Legislature, 1824-1828; of the State Constitutional Convention, 1837; secretary United States Treasury, 1849-1850; State attorney-general, 1861-1867; president State Constitutional Convention, 1873

placing it under the control of a corporation whose methods of management must result in great benefit to the people of the State. This purchase was made in 1857, and from that year the Pennsylvania Railroad company dates its most progressive history.

But the work of extension did not end with the purchase of the public works, although the latter cost $7,500,000. In 1861 the company leased for 999 years the Harrisburg, Portsmouth, Mount Joy and Lancaster road and brought it under the Pennsylvania's management. In all later years the work of extension and improvement has been carried forward with commendable zeal until the present great system includes, in whole, or in part (including main line, branches and spurs, leased lines and lines operated under contract, and trackage rights)) one hundred and ten lesser lines of road. The main line from Philadelphia to Pittsburg covers a distance of 329.01 miles, yet the total mileage covered by the company's operations covers a distance of 3,757.14 miles, not including that of the Northern Central, the Cumberland Valley, the Philadelphia, Wilmington and Baltimore, or any of the railroads connected with the Pennsylvania company west of Erie and Pittsburg. Indeed, in considering the details and operations of this great corporation, it should be remembered that the figures given in subsequent paragraphs do not include any of the lines above mentioned or of the Pittsburg, Cincinnati, Chicago and St. Louis railroad, all of which are parts of the greater company's system.

According to the most recent published reports (1900-1901), the capitalization of the Pennsylvania railroad is $354,716,174, classified as follows: Capital stock outstanding, $206,163,995; funded debt, $83,537,840; other indebtedness, including current liabilities, $65,014,339. The assets aggregate $381,527,836, as follows: Cost of road owned, $78,186,904; equipment, $42,978,824; stock and bonds owned, $185,744,304; cash and current assets, $45,827,103; other assets, $28,760,701. Says the report: "The significant features of the table of assets as reported by this company are that they exhibit the wonderful magnitude of the corporation from a financial standpoint, as when placed in comparison with the figures showing the assets of the company twenty-five years ago they clearly indicate its steady financial growth, and that expansion through leasing, purchase, mergers and consolidation has played no small part in its operations. The ownership of $184,000,000 of stocks and bonds of other corporations, this amount being more than double the cost of road owned, is unquestionable evidence of the expansion tendencies of the Pennsylvania Railroad company."

In its operation as a common carrier the company employs 2,141 locomotives, 1,935 passenger cars, 95,724 freight cars, and 5,080 devoted to its own purposes; total, 102,739 cars. The number of persons employed during the year was 72,193, to whom wages were paid aggregating $41,856,462. The road carried during the year 82,798,063 tons of freight, of which 4,931,503 tons were the products of agriculture, 1,796,135 the products of animals, 54,566 the products of the mines, 3,980,231 the products of the forests, 15,307,293 the products of manufactories, 447,931 tons of merchandise and 1,778,063 tons of miscellaneous shipments; total freight revenue for the year, $70,508,266. The revenue from passenger service amounted to $24,025,589, and from other earnings, except freight, $1,352,329; total earnings from operation, $95,886,184; total income from all sources, $101,673,457. There was paid during the year $12,081,154 for maintenance of way and structure; $14,425,808 for maintenance of equipment; $33,403,719 for expenses of transportation; $2,203,451 for general expenses, and $28,742,003 for expenses of operation; grand total of expenses for the year, $90,856,135. Dividends paid stockholders amounted to $9,089,078, and $1,728,244 was carried to the credit of the surplus account.

The Pennsylvania Company is under the same general management as the Pennsylvania Railroad company, a part of the same system, yet maintains a separate corporate existence and keeps a separate account of business. It is in control of all the lines of the general system west of Pittsburg, except that of the P., C., C. & St. L., which also is a part of the greater system. The Pennsylvania Company in its present character was organized under the laws of this State, April 1, 1871, and is a consolidation of thirty distinct lines of road. It has a capitalization of $70,255,482, and assets aggregating $76,861,148. The number of miles operated is 1,395.62, of which only 278.47 miles are in this State. The company employs in its service 533 locomotives, 489 passenger cars, 44,983 freight cars, and 378 cars in maintaining its roads. It employs 18,484 persons, to whom there was paid during the current year $10,344,177. The receipts from passenger service amounted to $5,849,469, from freight service $19,433,893, and from other sources, $336,981; total revenues from all sources, $28,784,070. During the same period there was paid for operating expenses $17,089,541, and for other expenses $9,400,327.

The Northern Central Railroad Company belongs to the Pennsylvania system and dates its organization from 1854, having been incorporated in Maryland March 10 and in this State May 3 of that year. The company operates 381.06 miles of road, of which 230.74 miles are within this State.

The Philadelphia and Erie Railroad Company, now operated by the Pennsylvania Railroad company, and one of its most important auxiliary branches, was incorporated April 3, 1837, under the name of Sunbury and Erie Railroad company. On January 1, 1862, before the road was fully completed, it was leased to the Pennsylvania Railroad company.

The Pittsburg, Cincinnati, Chicago and St. Louis Railway Company, although operating as an independent corporation, is a part of the great Pennsylvania system. The company is the result of several consolidations and mergers, and controls the business which previously was carried on by more than twenty separate corporations. The consolidation was effected June 10, 1890, and the present operating company is chartered under the laws of Pennsylvania, Ohio, Indiana and Illinois. Of a total mileage of

1,407.36 operated by that company only 70.72 miles are within this State. The capitalization is $101,661,038.

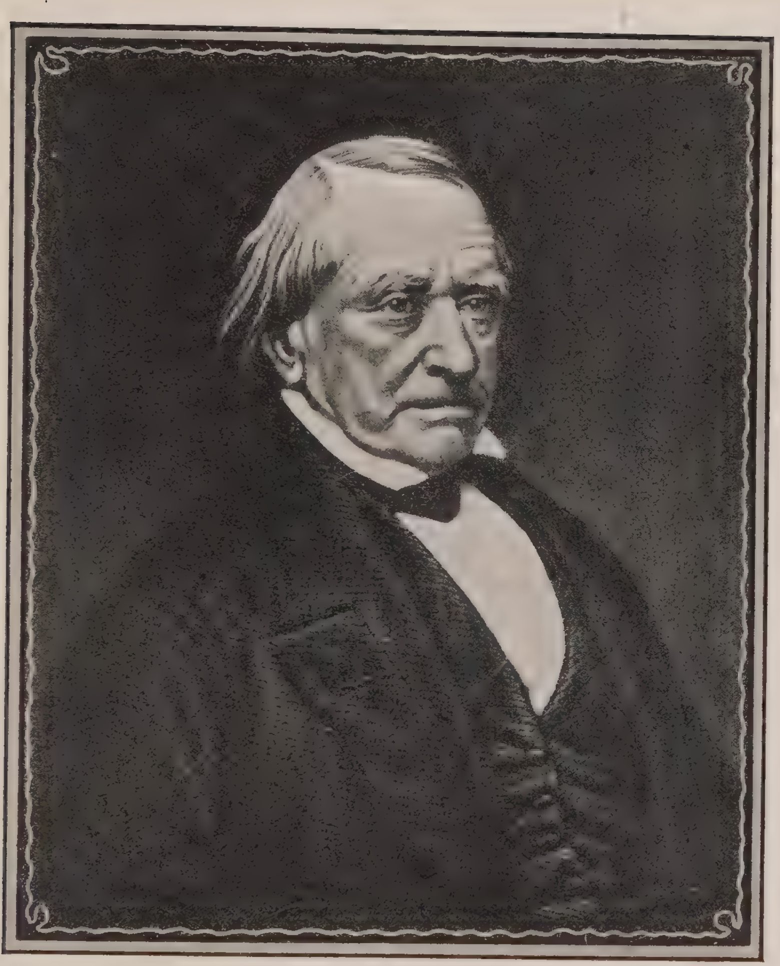
Among the other principal railroads in operation within this State (some of which are and others are not incorporated under Pennsylvania laws, but each of which is what is usually termed a trunk line road) there may be mentioned the Baltimore and Ohio, the Buffalo, Rochester and Pittsburg, the Central Railroad of New Jersey, the Delaware, Lackawanna and Western (now known as the Lackawanna), the Erie, the Lake Shore and Michigan Southern, the New York Central and Hudson River, the New York, Chicago and St. Louis, the New York, Ontario and Western, and the Philadelphia, Wilmington and Baltimore. As factors in the commercial history of the State each of these carrying roads has for years played an important part, and as such is deserving of mention in these pages. However, it is impossible in a chapter of limited scope to enter into a detailed history of all the railroads within a State as large as this, wherefore in the present connection there will be given only the names of existing companies, with dates of incorporation or organization under their present character and management.

The appended list, for convenience, is alphabetically arranged, and is compiled largely from data obtained from the last published report of the Secretary of Internal Affairs. The list shows the name of the company, date of incorporation or organization, miles of road, and name of operating company:

Allegheny Junction, org. Oct. 19, 1898; 1 mile.
Allegheny and South Side, Sept. 20, 1892; 5 miles.
Allegheny Terminal, July 28, 1889; 12 m.; op. by B., R. & P.
Allegheny Valley, Feb. 12, 1852; 260.51 m.; op. by P. R. R.
Allegheny and Western, Jan. 22, 1898; 59.57 m.; op. by B., R. & P.
Allentown, Apr. 19, 1853; 4.45 m.; op. by P. & R.
Allentown Terminal, Aug. 17, 1888; 4.63 m.; op. by C. R. R. of N. J.
Altoona and Beech Creek, Apr. 17, 1897; 15 m.; op. by J., E. & E.
Arnot and Pine Creek, Jan. 12, 1881; 11.83 m.; op. by Erie Co.
Bald Eagle Valley, Mar. 25, 1861; 92.63 m.; op. by P. R. R.

Baltimore and Cumb. Valley, Aug. 19, 1878; 4.55 m.; op. by W. M. Co.
Baltimore and Cumb. Valley Extension, June 25, 1880; 26.52 m.; W. M. Co.
Baltimore and Harrisburg, Sept. 20, 1886; 97.60 m.
Baltimore and Harrisburg, E. Ex., Nov. 29, 1890; 16.60 m.; op. by W. M. Co.
Baltimore and Harrisburg, W. Ex., Apr. 30, 1888; 15 m.; op. by W. M. Co.
Baltimore and Ohio, Feb. 28, 1827; 3,216.26 m.; 381.50 m. in Penna.
Baltimore and Philadelphia, Feb. 17, 1883; 59.32 m.; op. by B. & O.
Bangor and Portland, May 19, 1879; 51.61 m.
Barclay, June, 1862; 15.65 m.
Bare Rock, Oct. 19, 1892; 2.50 m.
Beaver and Ellwood, May 20, 1890; 7.51 m.; op. by P. & L. E.
Beech Creek, June 29, 1886; 160.26 m.; op. by N. Y. Cent.
Bedford and Bridgeport, Apr. 29, 1891; 49.17 m.; op. by P. R. R.
Bellefonte Central, Jan. 12, 1892; 26.70 m.
Belvidere Delaware, Mar. 2, 1836; 81 m.; op. by P. R. R.
Berlin, July 19, 1879; 8 m.; op. by B. & O.
Berlin Branch, Mar. 26, 1876; 7 m.
Bessemer and Lake Erie, Dec. 31, 1900. (See P., B. & L. E.)
Big Level and Kinzua, Aug. 27, 1881; 10.70 m.; op. by B., B. & K.
Bloomsburg and Sullivan, Dec. 31, 1883; 30 m.
Bradford, Bordell and Kinzua, April 1, 1892; 48.08 m.
Bradford and Western Penna., July 27, 1891; 8.18 m.
Brockport and Shawmut, July 31, 1886; 2.10 m.; op. by Erie R. R.
Brownstone and Middletown, Feb. 8, 1892; 2.50 m.
Brookville, June 10, 1896; 13 m.
Buf., Bradford and Pittsburg, Mar. 4, 1859; 26.17 m.; op. by Erie R. R.
Buf., Rochester and Pittsburg, Mar. 11, 1887; 472.08 m.
Buf. and Susq., org. not given; 172.22 m.
Bustleton, Dec. 27, 1890; 4.16 m.; op. by P. R. R.
Cambria and Clearfield, Jan. 13, 1887; 102.66 m.; op. by P. R. R.
Cammal and Black Forest, Mar. 14, 1894; 28.10 m.
Catasauqua and Foglesville, Apr. 5, 1853; 29.50 m.
Catawissa, Mar. 21, 1860; 96.50 m.; op. by P. & R.
Central Penn. and Western, Mar. 1, 1893; 31 m.
Central of New Jersey, Feb. 26, 1847; 694.98 m.; 266.94 m. in Penna.
Central of Penna., Sept. 11, 1891; 32.60 m.
Central Trunk, Apr. 11, 1868; 5.26 m.; op. by L. S. & M. S.
Chartiers Ry., Jan. 2, 1867; 23.48 m.; op. by P., C., C. & St. L.
Chester Creek, Apr. 16, 1866; 6.69 m.; op. by P. & B. Central.
Chester and Del. River, Oct. 9, 1871; 5.35 m.

Chestnut Hill, Apr. 10, 1848; 4 m.; op. by P. & R.
Clarion River Ry., Dec. 17, 1889; 12 m.; op. by P., S. & N.
Clearfield and Mahoning, May 30, 1892; 25.87 m.; op. by B., R. & P.
Clearfield Southern, July 6, 1898; 7 m.
Cleveland and Pittsburg, March, 1836; 201.41 m.; op. by Penna. Co.
Colebrookdale, Mar. 23, 1865; 12.84 m.; op. by P. & R.
Columbia and Pt. Deposit, July 17, 1890; 43.21 m.; op. by P. R. R.
Confluence and Oakland, Apr. 2, 1890; 19.70 m.; op. by B. & O.
Connecting Ry., Apr. 14, 1863; 6.75 m.; op. by P. R. R.
Cornwall, May 25, 1850; 12.67 m.
Cornwall and Lebanon, Feb. 28, 1882; 24.89 m.
Coudersport and Pt. Allegheny, May 18, 1882; 45 m.
Cresson and Irvona, June 30, 1894; 29.54 m.; op. by P. R. R.
Cumberland Valley, June 27, 1835; 162.85 m.
Cumberland Valley and W'boro, June 7, 1901; 17.90 m.; op. by Cumb. Val.
Delaware and Hudson, Apr. 23, 1823; 660.83 m.
Del., Lack. and Western, Mar. 11, 1853; 798.14 m.; 206.92 in Penna.
Delaware River R. R. and Br. Co., Mar. 17, 1896; 10.27 m.; op. by P. R. R.
Del., Susq. and Schuylkill, Apr. 14, 1890; 180.95 m.
Dillsburg and Mechanicsburg, Nov. 1, 1871; 7.70 m.; op. by Cumb. Val.
Downingtown and Lancaster, July 30, 1888; 37.58 m.; op. by P. R. R.
Dunkirk, Alle. Val. and Pittsburg, Dec. 11, 1872; 90.60; op. by N. Y. Cent.
Eagles' Mere, Sept. 11, 1891; 8 m.; op. by Williamsport & N. Br.
East Broad Top, July 3, 1871; 44.62 m.
East Mahanoy, Mar. 9, 1856; 10.95 m.; op. by P. & R.
East Pennsylvania, Apr. 27, 1857; 35.38 m.; op. by P. & R.
Easton and Northern, Mar. 28, 1889; 12.78 m.; op. by B. & Portland.
Ebensburg and Black Lick, Apr. 4, 1868; 20.88 m.; op. by P. R. R.
Eddystone and Del. River, June 12, 1899; 1.50 m.
Elk and Highlands, Apr. 4, 1898; 15.32 m.
Ellwood Connecting, Apr. 11, 1892; .68 m.; op. by P. & L. E.
Ellwood Short Line, Apr. 25, 1890; 3.10 m.; op. by P. & W.
Elmira and Williamsport, Apr. 17, 1860; 75.50 m.; op. by N. C. Ry.
Emporium and Rich Valley, Feb. 16, 1891; 13.50 m.
Engleside, Sept. 22, 1892; 0.17 m.; op. by P. R. R.
Erie, reorg. Nov. 14, 1895; 1,886.17 m.; 503.62 in Penna.
Erie and Pittsburg, June 25, 1858; 84.47 m.; op. by Penna Co.
Erie and Wyoming Valley, Nov. 6, 1882; 78.24 m.
Etna and Montrose, May 6, 1896; 2 m.
Fair Hill, June 13, 1892; 0.78 m.; op. by P. R. R.



Charles Stewart

Entered the navy as lieutenant 1798; promoted to captain 1806; active in the War of 1812; commanded the Mediterranean squadron 1816-1820, and the Pacific squadron 1820-1824; retired as senior commodore 1856; flag officer 1860; commissioned rear-admiral 1862

Fairmount, Morgantown and P'b'g, Aug. 10, 1893; 57.60 m.; op. by B. & O.
Fall Brook, July 1, 1892; 101.34 m.; op. by N. Y. Cent.
Fayette County, Mar. 17, 1858; 12.66 m.; op. by B. & O.
Gettysburg and Harrisburg, July 16, 1891; 34.07 m.
Glenwood, July 20, 1896; 2.05 m.; op. by B. & O.
Hanover and Newport, Mar. 14, 1894; 6.81 m.
Harrisburg, Portsmouth, Mt. Joy and Lanc., June 3, 1834; 52.64 m.; P. R. R.
Hunter's Run and Slate Belt, Jan. 8, 1891; 13.50 m.
Huntingdon and Broad Top Mt., May 6, 1852; 64.10 m.
Ironton, March 5, 1859; 10 m.
Jamestown and Franklin, Apr. 5, 1862; 50.91 m.; op. by L. S. & M. S.
Jefferson, Feb. 15, 1864; 44.69 m.; op. by Erie Co.
Johnsonburg, March 14, 1887; 19.69 m.; op. by Penna. Co.
Johnsonburg and Bradford, Nov. 15, 1887; 19.60 m.; op. by B., R. & P.
Johnstown and Stony Creek, Jan. 19, 1888; 2.44 m.
Junction, May 28, 1860; 3.62 m.; op. by P., W. & B.
Kane and Elk, Sept. 4, 1895; 10 m.
Keating and Smethport, Aug. 21, 1899; 0.50 m.
Kensington and Tacony, Mar. 25, 1884; 6.90 m.; op. by P. R. R.
Kersey, March 13, 1900; 9.56 m.; op. by P., S. & N.
Kinzua Hemlock, June 12, 1890; 9 m.; op. by Mt. J., K. & R.
Kinzua and Tiona, June 21, 1897; 9 m.
Kinzua Valley, Mar. 30, 1889; 10 m.; op. by P. R. R.
Kishacoquillas Valley, June 14, 1892; 9.50 m.
Kushequa, May 3, 1898; 12.61 m.; op. by Mt. J., K. & R.
Lackawanna and Montrose, Sept. 30, 1898; 10.48 m.
Lake Shore and Mich. Southern, June 24, 1869; 1,411.16 m.; 102.49 in Pa.
Lancaster, Oxford and Southern, Sept. 3, 1890; 20 m.
Lanc. and Reading Narrow Gauge, Sept. 25, 1894; 15.21 m.; op. by P. R. R.
Leetonia Ry., Mar. 7, 1899; 13.78 m.
Lehigh and Lackawanna, May 1, 1861; 25.39 m.; op. by C. R. R. of N. J.
Lehigh and New England, Apr. 2, 1895; 64.50 m.
Lehigh and Susq., org. 1837; 163.76 m.; op. by C. R. R. of N. J.
Lehigh Valley, Sept. 20, 1847; 1,387.38 m.
Lewisburg and Buf. Val., May 10, 1897; 15 m.
Lewisburg and Tyrone, Dec. 31, 1879; 85.12 m.; op. by P. R. R.
Ligonier Valley, Apr. 29, 1871; 11 m.
Little Schuyl. Nav., R. & Coal Co., Oct. 15, 1829; 45.20 m.; op. by P. & R.
Loyalsock, Dec. 3, 1884; 35.28 m.; op. by L. Val.
Lykens Valley, org. about 1830-33; 19.70 m.; op. by N. Centr.

McKeesport Connecting, Mar. 20, 1889; 0.58 m.
McKeesport Terminal, July 20, 1896; 0.56 m.
Mahoning State Line, Aug. 10, 1891; 3.16 m.; op. by P. & L. E.
Mahoning Valley, Oct. 14, 1890; 1.89 m.; op. by B., R. & P.
Maryland and Pennsylvania, Feb. 14, 1901; 85.20 m.
Mead Run, Apr. 30, 1897; 10.11 m.; op. by Mt. J., K. & R.
Meadville Con. L. and Linesville, June 27, 1891; 23.90 m.; op. by Bes. & L. E.
Medix Run, Feb. 7, 1895; 8.50 m.
Middletown and Hummelstown, July 31, 1888; 6.35 m.
Mill Cr. and Mine Hill Nav. and R. R., Feb. 27, 1828; 3.81 m.; op. by P. & R.
Millersburg, Sept. 13, 1899; 1.39 m.; op. by P. & N. W.
Mine Hill and Schuylkill Haven, Mar. 24, 1828; 51.80 m.; op. by P. & R.
Mohnsville and Adamstown, May 29, 1894; 8 m.
Moosic Mt. and Carbondale, Feb. 15, 1887; 4.21 m.; op. by Erie Co.
Monongahela Con., Mar. 31, 1885; 5.26 m.
Monongahela and Washn., July 20, 1899; 11.06 m.; op. by P. R. R.
Mont Alto, Nov. 14, 1871; 17.90 m.; op. by Cumb. V.
Montour, Sept., 1877; 13 m.
Montrose, Apr. 30, 1871; 27.32 m.; op. by L. Val.
Mt. Carbon and Pt. Carbon, July 16, 1842; 2.50 m.; op. by P. & R.
Mt. Carmel and Natalie, Mar., 1891; 7.50 m.; op. by P. & R.
Mt. Jewett, Kinzua and Ritterville, Apr. 27, 1889; 47.86 m.
Mt. Penn Gravity, Apr. 26, 1889; 8 m.
Mt. Pleasant and Bradford, May 16, 1870; 9.70 m.; op. by B. & O.
Mt. Pleasant and Latrobe, Aug. 20, 1881; 1.06 m.
Nesquehoning Valley, May 14, 1861; 16.66 m.; op. by C. R. R. of N. J.
Neversink Mountain, Feb. 5, 1889; 8 m.
New Castle and Beaver Valley, Mar. 29, 1862; 14.98 m.; op. by Penna. Co.
New Castle and Butler, Sept., 1881; 2.50 m.
New Haven and Dunbar, Nov. 22, 1892; 5.25 m.
Newport and Sherman's Valley, July 30, 1890; 30.67 m.
N. Y. Centr. and Hudson R., consol. Nov. 1, 1869; 2,963.14 m.; 408.29 in Pa.
N. Y., Chicago and St. Louis, Sept. 27, 1887; 538 m.; 45.43 m. in Penna.
N. Y., Lack. and Western, Nov. 23, 1880; 6.38 m.; op. by D., L. & W.
N. Y., Lake Erie and Western, Jan. 28, 1881; 48.54 m.; op. by Erie Co.
N. Y., Ontario and Western, Jan. 21, 1880; 480.46 m.
N. Y. and Pennsylvania, June 22, 1896; 51.70 m.
N. Y., Susq. & Western, Apr. 25, 1893; 151.14 m.
Nittany Valley, Mar. 15, 1887; 7.62 m.
North Bend and Kettle Creek, Apr. 24, 1893; 32.30 m.

David Wilmot

Congressman, 1845-1851; author of the famous Wilmot Proviso in 1846; United States senator 1861-1863; judge United States Court of Claims, 1863-1868

Northern Central, Dec. 9, 1854; 381.06 m.
North East Pennsylvania, Dec. 4, 1870; 25.64 m.
Northern Liberties Ry., Aug. 7, 1896; 0.67 m.
North Pennsylvania, Apr. 8, 1852; 86.40 m.; op. by P. & R.
Norristown Junction, Nov. 8, 1879; 0.37 m.; op. by P. & R.
Nypano, Mar. 16, 1896; 430.31 m.; op. by Erie Co.
Ohio and Baltimore Short Line, May 10, 1881; 9.30 m.; op. by B. & O.
Ohio Connecting Ry., Nov. 22, 1886; 3.27 m.; op. by P., C., C. & St. L.
Ohio River Junction, Jan. 18, 1898; 3.40 m.
Ont., Carbondale and Scranton, Oct. 3, 1889; 54.05 m.
Pennsylvania, Apr. 13, 1846; 3,757.14 m.
Pennsylvania Co., Apr. 1, 1871; 1,395.62 m.
Penn. and N. Y. Canal and R. R., May 15, 1858, and Mar. 20, 1865; 138.66 m.; op. by L. Valley.
Penn. and Northwestern, Jan. 1, 1890; 77.22 m.
People's Railway, May 24, 1865; 4.40 p. m.; op. by Schuyl. Elec. Ry. and Schuyl. and L. V. R. R.
Perkiomen, Mar. 23, 1865; 38.33 m.
Perry County, Feb. 4, 1887; 22.60 m.
Phila. and Baltimore Central, Mar. 17, 1853; 80.37 m.; op. by P., W. & B.
Philadelphia Belt Line, May 10, 1889; 5.80 m.
Phila., Bustleton and Trenton, May 1, 1893; 3.55 m.; op. by P. R. R.
Phila. and Chester Valley, Mar. 7, 1888; 21.49 m.
Phila. and Delaware County, Apr. 2, 1880; 11.89 m.; op. by P., W. & B.
Phila. and Erie, Apr. 3, 1837; 304.80 m.; op. by P. R. R.
Phila. and Frankford, Mar. 12, 1892; 2.59 m.; op. by P. & R.
Phila., Germ't'n and Chestnut Hill, Dec. 28, 1882; 13.87 m.; op. by P. R. R.
Phila., Germ't'n and Norristown, Feb. 17, 1831; 20.60 m.; op. by P. & R.
Phila., Harrisb'g and Pittsburg, July 24, 1890; 47.17 m.; op. by P. & R.
Phila., Newtown and New York, Jan. 29, 1873; 21.70 m.
Phila. and Reading, Nov. 17, 1896; 1,002.90 m.
Phila. and Reading Terminal, Apr. 13, 1888; 1.30 m.; op. by P. & R.
Phila. and Trenton, June 9, 1832; 26.50 m.; op. by P. R. R.
Phila., Wilmington and Baltimore, Apr. 2, 1831; 720.99 m.
Pickering Valley, Apr. 3, 1869; 11.21 m.; op. by P. & R.
Pine Creek, Feb. 17, 1870; 74.80 m.; op. by N. Y. Centr.
Pittsburg, Allegheny and McKee's Rocks, Sept. 25, 1889; 14.30 m.
Pittsburg and Allegheny River, Dec. 19, 1898; 2 m.
Pittsburg, Bessemer and Lake Erie, Dec. 22, 1896; 228.74 m.
Pittsburg and Castle Shannon, Sept. 21, 1871; 6.50 m.

Pittsburg, Chartiers and Youghiogheny, Oct., 1881; 19.74 m.

Pittsburg, Cin., Chi. and St. Louis, June 10, 1890; 1,407.36 m.

Pittsburg and Connellsville, June 11, 1846; 148.80 m.; op. by B. & O.

Pittsburg and Eastern, Jan. 3, 1895; 13.46 m.; op. by N. Y. Centr.

Pittsburg, Ft. Wayne and Chicago, Feb. 26, 1862; 469.89 m.; op. by P. R. R.

Pittsburg, Johnstown, Ebensburg and Eastern, Oct. 2, 1897; 35.31 m.

Pittsburg Junction, Aug. 6, 1881; 6.92 m.

Pittsburg and Lake Erie, May 11, 1875; 180.79 m.

Pittsburg, Lisbon and Western, Apr. 16, 1896; 28 m.

Pittsburg, McKeesport and Youghiogheny, Aug. 4, 1881; 103.41 m.; op. by P. & L. E.

Pittsburg and Moon Run, Feb. 10, 1891; 5 m.

Pittsburg and Northern, May, 1881; 3.30 m.

Pittsburg and Ohio Valley, Dec. 5, 1899; 13.18 m.

Pittsburg, Shawmut and Northern, Aug. 1, 1899; 162.40 m.

Pittsburg, Virginia and Charleston, Oct. 14, 1868; 90.69 m.; op. by P. R. R.

Pittsburg and Western, June 28, 1887; 350.68 m.

Pittsburg, Youngstown and Ashtabula, Aug. 17, 1887; 125.09 m.; op. by Penna. Co.

Plymouth, Dec. 9, 1867; 8.90 m.; op. by P. & R.

Pomeroy and Newark, Dec. 29, 1881; 26.70 m.; op. by P. R. R.

Quakertown and Eastern, July 6, 1896; 13.30 m.

Reading and Columbia, May 19, 1857; 59.73 m.

Reading, Marietta and Hanover, Feb. 22, 1882; 6.36 m.; op. by R. & Col.

Reynoldsville and Falls Creek, Jan. 11, 1897; 21 m.

Ridgeway and Clearfield, Apr. 20, 1882; 27.33 m.; op. by P. R. R.

Riverfront, May 5, 1876; 4.62 m.; op. by P. R. R.

Roch., Beaver F., and Western, Mar. 27, 1889; 0.55 m.; op. by Penna. Co.

Rupert and Bloomsburg, Dec. 31, 1888; 1.57 m.

Salisbury, May 8, 1875; 16 m.; op. by B. & O.

Scalp Level., Feb. 20, 1897; 24.69 m.; op. by P. R. R.

Schuylkill and Juniata, June 1, 1900; 289.93 m.; op. by P. R. R.

Schuylkill and Lehigh, June 7, 1880; 43.98 m.; op. by P. & R.

Schuylkill and Lehigh Val., Oct. 9, 1886; 41.68 m.; op. by L. Val.

Schuylkill River, East Side, July 14, 1883; 11 m.; op. by B. & O.

Schuylkill Val. Nav. and R. R., Mar. 20, 1827; 10.96 m.; op. by P. & R.

Scottdale Con., Sept. 16, 1897; 1 m.

Scranton and Spring Brook, July 3, 1897; 9 m.

Shamokin, Sunbury and Lewisburg, Feb. 12, 1882; 31.29 m.; op. by P. & R.

Shamokin Valley and Pottsville, Mar. 25, 1858; 38.42 m.; op. by N. Centr.

Sharon Railway, July 16, 1873; 33.07 m.
Shenango Valley, May 3, 1886; 1.95 m.; op. by L. S. & M. S.
Sharpsville, Mar. 6, 1876; 17.75 m.
Sheffield and Tionesta, June 1, 1901; 34 m.
Slackwater Con., June 30, 1892; 1 m.; op. by Union R. R.
Slate Run, Dec. 9, 1884; 15 m.
Smethport, Mar. 6, 1899; 8.17 m.; op. by Mt. J., K. & R.
Smithfield and Masontown, July 18, 1899; 7.91 m.; op. by B. & O.
Somerset and Cambria, Jan. 27, 1879; 45.10 m.; op. by B. & O.
South Branch, May 7, 1897; 8 m.
South Chester, June 22, 1891; 3.76 m.; op. by P., W. & B.
South Easton and Phillipsburg, July 25, 1889; 0.33 m.; op. by L. & H.
South Fork, July 2, 1890; 12.17 m.; op. by P. R. R.
Southern Pennsylvania, Feb. 1, 1873; 21.40 m.; op. by Cumb. Val.
South Shore, Sept. 14, 1892; 4.85 m.
South West Con., May 20, 1897; 2.50 m.
South West Penna, Mar. 16, 1871; 129.99 m.; op. by P. R. R.
State Line and Sullivan, Dec. 2, 1874; 24 m.; op. by L. Val.
Stewart, Sept. 9, 1887; 0.32 m.; op. by L. S. & M. S.
Stewartstown, Sept., 1884; 7.20 m.
Stony Creek, May 26, 1868; 10.07 m.
Susquehanna and Buffalo, Sept. 22, 1891; 2.50 m.
Susquehanna Con., Dec. 14, 1896; 21.39 m.; op. by W. B. & E.
Tamaqua, Hazelton and Northern, May 18, 1891; 9.91 m.
Tioga, org. 1851; 46.39 m.; op. by Erie Co.
Tionesta Valley, Aug. 3, 1894; 74.30 m.
Tionesta Valley and Hickory, Mar. 26, 1892; 5 m.
Tionesta Valley and Salmon Cr., May 12, 1893; 6 m.
Trenton Cut Off, Dec. 3, 1889; 15.70 m.; op. by P. R. R.
Trenton Delaware Bridge, Mar. 3, 1798; 0.19 m.; op. by P. R. R.
Tresckow, May 26, 1870; 7.60 m.; op. by C. R. R. of N. J.
Tuscarora Valley, April, 1891; 27 m.
Tyrone and Clearfield, Apr. 1, 1867; 136.08 m.; op. by P. R. R.
Union, July 2, 1894; 24.91 m.
Ursina and North Fork, Feb., 1882; 5 m.
Valley Connecting, July 28, 1898; 0.86 m.
Washington and Franklin, July 10, 1899; 19.10 m.; op. by W. Md.
Washington Run, Apr. 25, 1895; 8 m.
Waynesburg and Washington, May 18, 1875; 28.15 m.
West Chester, Feb. 18, 1831; 5.22 m.; op. by P. R. R.

West Clarion, July 21, 1897; 1.99 m.
Western Maryland, Mar. 21, 1853; 162.89 m.
Western N. Y. and Penna., Mar. 18, 1895; 576.39 m.
Western Pennsylvania, Mar. 22, 1860; 137.51 m.; op. by P. R. R.
West Side Belt, July 25, 1895; 3 m.
Wheeling, Pittsburg and Baltimore, Apr. 5, 1887; 64.23; op. by B. & O.
Wilkes-Barre and Eastern, Apr. 19, 1892; 86.85 m.
Wilkes-Barre and Harvey's Lake, Sept. 24, 1885; 15.18 m.; op. by L. Val.
Wilkes-Barre and Scranton, Sept. 8, 1886; 4.37 m.; op. by C. R. R. of N. J.
Williamsport and No. Branch, reorg. Sept. 1, 1882; 53 m.
Williams Valley, Sept. 19, 1891; 12 m.
Wilmington and Northern, Jan. 18, 1877; 88.41 m.; op. by P. & R.
Wind Gap and Delaware, Nov. 24, 1880; 9.96 m.; op. by C. R. R. of N. J.
York, Hanover and Frederick, Mar. 1, 1897; 55.65 m.; op. by P. R. R.
York Southern, Nov. 1, 1894; 42.30 m.
Youghiogheny Northern, Aug. 16, 1881; 2.05 m.; op. by P., McK. & Y.
Youghiogheny and Wick Haven, Sept. 18, 1893; 2,300 ft.

CHAPTER VII.

NATURAL RESOURCES. IRON

IN the following pages only the earliest iron and steel enterprises in the eastern, central, and western sections of Pennsylvania will be specifically mentioned, following which historical survey will be presented a statistical summary of the present development of the important iron and steel industries of this great Commonwealth. The early settlers of Pennsylvania were encouraged to engage in the manufacture of iron because they found existing everywhere all the conditions necessary to its economical production—iron ore in abundance, limestone for use in the blast furnace, the forests to furnish fuel, and the streams to supply water power. Wherever they went they set up small furnaces and forges almost as soon as they supplied themselves with saw mills and grist mills.

Two years before the death of William Penn in 1718 the first iron works were established in Pennsylvania. The event is briefly described in one of Jonathan Dickinson's letters, written in 1717, and quoted by Mrs. James in her "Memorial of Thomas Potts, Junior:" "This last summer one Thomas Rutter, a smith, who lives not far from Germantown, hath removed further up in the country and of his own strength hath set upon making iron. Such it proves to be, as is highly set by by all the smiths here, who say that the best of Sweed's iron doth not exceed it; and we have accounts of others that are going on with iron works." Rutter's enterprise was a bloomary forge, which was probably called Pool forge, the exact location of which is uncertain, but it was on Manatawny creek, and probably about three miles above Pottstown. The forge was sometimes known as Manatawny forge. In the Philadelphia "Weekly Mercury" for November 1, 1720, Thomas Fare, a Welshman, is said to have run away from "the forge at Manatawny." Mrs. James visited the spot it is supposed to have occupied, "and could see some remains of the dam and an excavation in the bank where buildings once stood." Another Pool forge is known to have existed farther up the stream, probably built after the first one was abandoned. This Pool forge was attacked by the Indians in 1728, who were repulsed. In his "History of American Manufactures" Bishop says: "A forge is mentioned in March, 1719-20, at Manatawny, then in Philadelphia, but now in Berks or Montgomery, county." This reference is to Pool forge.

Mrs. James says that Rutter was an English Quaker, who was a resident of Philadelphia in 1685, and who removed in 1714 from Germantown "forty miles up the Schuylkill in order to work the iron mines of the Manatawny region." She gives a *verbatim* copy of the original patent of William Penn to Thomas Rutter for 300 acres of land "on Manatawny creek," dated February 12, 1714-15. The following obituary notice in the "Pennsylvania Gazette," published at Philadelphia, dated March 5 to March 13, 1729-30, ought to be conclusive proof of the priority of Thomas Rutter's enterprise: "Philadelphia, March 13. On Sunday night last died here Thomas Rutter, Senior, of a short illness. *He was the first that erected an iron work in Pennsylvania.*" In his will, which we have examined, he is styled a blacksmith.

In Day's "Historical Collections" mention is made by a historian of Chester county of Samuel Nutt, an English Quaker, who built a forge called Coventry, in the northern part of Chester county, which "went into operation about the year 1720" and made "the first iron" manufactured in Pennsylvania, which latter statement is an error. Another historian of Chester county contributes to Egle's "History of Pennsylvania" the information that Samuel Nutt "took up land, on French creek, in 1717, and about that time built a forge there. A letter written by him in 1720 mentions an intention of erecting another forge that fall." Mrs. James states that Nutt purchased 800 acres of land at Coventry in October, 1718. Nutt probably made iron at Coventry forge in 1718. Bishop refers to a letter written by Dickinson in July, 1718, stating that "the expectations from the iron works forty miles up Schuylkill are very great." In April, 1719, Dickinson again wrote: "Our iron promises well. What hath been sent over to England hath been greatly approved. Our smiths work up all they make, and it is as good as the best Swedish iron." Dickinson probably referred to Nutt's forge as well as to Rutter's.

Coventry forge was in operation in 1756. In 1770 it is noted on William Scull's map of Pennsylvania. It was in active operation after the Revolution, and in 1849 and 1856 we again find it active, making blooms from pig iron. It made its last iron in 1870. The foundations of the old forge may still be seen.

The next iron enterprise in Pennsylvania was undoubtedly Colebrookdale furnace, which was built about 1720 by a company of which Thomas Rutter was the principal member. It was located on Ironstone creek, in Colebrookdale township, Berks county, about eight miles north of Pottstown and three-fourths of a mile west of Boyertown. Plenty of cinder now marks the exact site. A large flour and saw mill stands about one hundred feet distant. This furnace supplied Pool forge with pig iron, and in course of time other forges, one of which was Pine forge, to be referred to hereafter. The Colebrookdale company appears to have been composed of Thomas Rutter, James Lewis, Anthony Morris, and others, Rutter owning at his death a two-thirds interest, as is shown by his will, on file in the office of the register of wills in Philadelphia.

In 1731, according to Mrs. James, Colebrookdale furnace and Pool forge were both owned by companies. In the list of owners of both enterprises appears the name of Thomas Potts, the founder of a family of the same name which has ever since been prominent in the manufacture of iron in Pennsylvania and in other States. He died at Colebrookdale in January, 1752. He was in his day the most successful iron manufacturer in Pennsylvania. In his will, dated 1747, he leaves his "two-thirds of Colebrookdale furnace and iron mines" to his son Thomas and his "one-third of Pine forge" to his son John. He was of either English or Welsh lineage. In 1733 the furnace was torn down and rebuilt by the company, Thomas Potts being the manager.

It would seem that friendly Indians were employed at Colebrookdale furnace, as "Indian John" and "Margalitha" are found in the list of workmen about 1728. A stove-plate cast at this furnace in 1763, and so inscribed, was exhibited at the Philadelphia Exhibition of 1876. In 1731 pig iron sold at Colebrookdale furnace "in large quantities" at £5 10s. per ton, Pennsylvania currency, a pound being equal to $2.66 2-3.

Soon after Nutt had built his forge at Coventry it is believed that he built a furnace on French creek, called "Redding." Mrs. James places the date of its erection at about 1720. It is probable that it was the second furnace in the State, Colebrookdale being the first. Samuel Nutt died in 1737.

Redmond Conyngham, quoted in Day's "Historical Collections," says that iron works are supposed to have been established in Lancaster county in 1726 by a person named Kurtz, who is said by another authority to have been an Amish Mennonite. In Egle's "History of Pennsylvania" it is stated that Kurtz's works were on Octorara creek. They may have been built in Maryland, just below the Pennsylvania line.

Durham furnace, on Durham creek, about one and a half miles above its entrance into the Delaware river in the extreme northern part of Bucks county, was built in 1727 by a company of fourteen persons, of which Anthony Morris, William Allen, Joseph Turner, and James Logan (Penn's secretary) were members. In the consolidated exhibit of the iron works of the Lehigh valley at the Philadelphia Exhibition in 1876 the keystone of the Durham furnace, bearing date 1727, was an interesting feature. The furnace was between 35 and 40 feet square and about 30 feet high. From the first this furnace made pig iron to be converted into bar iron, although subsequently, as early as 1741, stoves were cast at the furnace in large quantities. There were three early forges on Durham creek, all below the furnace, and these and many other forges in the neighborhood, on both sides of the Delaware, were supplied with pig iron from this furnace.

As late as 1780 negro slaves were employed at Durham, five of whom in that year escaped to the British lines. Much of the iron made at Durham was taken to Philadelphia in boats fashioned somewhat like an Indian canoe but much larger, and first built at Durham; hence the term afterwards in common use, Durham boats. Large quantities of shot and shells for the Continental army were made at Durham furnace. The furnace was in active operation until 1791, with occasional intervals of suspension from various causes, when it blew out finally.

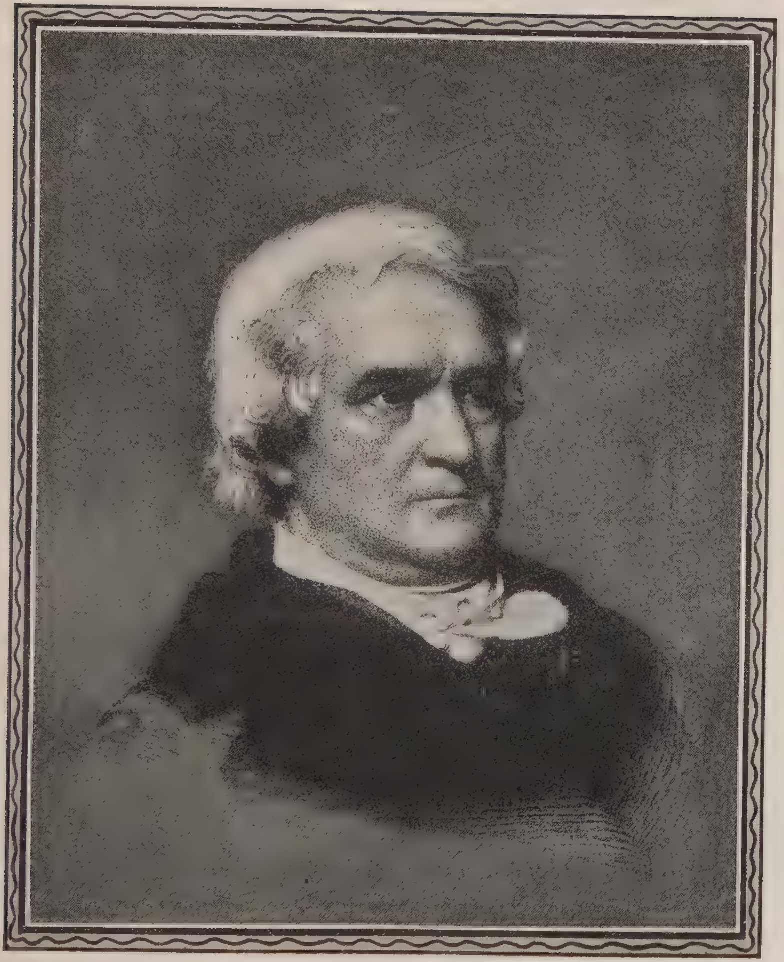
In 1728 there were four furnaces in blast in Pennsylvania, one of which was certainly Colebrookdale. Another was Durham. The others were probably Sir William Keith's, on Christiana creek, in the present State of Delaware, and Samuel Nutt's Reading furnace on French creek. In November, 1728, James Logan shipped three tons of Durham pig iron to England. In 1728-9 Pennsylvania exported 274 tons of pig iron to the mother country. Other furnaces and forges in Pennsylvania followed in rapid succession those already mentioned.

Warwick furnace was commenced in 1737 by the heirs of Samuel Nutt, and was built on the south branch of French creek, in Chester county. It was probably finished in 1738. In 1740 its management fell into the hands of Robert Grace, a friend of Benjamin Franklin, who had recently married the widow of Samuel Nutt, Jr. This lady was the granddaughter of Thomas Rutter. The celebrated Franklin stove was invented by Franklin in 1742, and in his autobiography he says: "I made a present of the model to Mr. Robert Grace, one of my early friends, who, having an iron furnace, found the casting of the plates for these stoves a profitable thing, as they were growing in demand." Mrs. James has seen one of these stoves, with the words "Warwick Furnace" cast on the front in letters two inches long.

Warwick furnace continued in active operation during a part of almost every year from its erection in 1738 down to 1867, when its last blast came to an end and the famous furnace was abandoned. During the Revolution it was very active in casting cannon for the Continental army, some of which were buried upon the approach of the British in 1777 and have only recently been recovered. Sixty cannon were cast at this furnace in 1776. There is now among the relics in Independence Hall, Philadelphia, a cast-iron bell which was cast at Warwick furnace in 1757 and used at Valley forge in 1777.

In 1740 or 1741 William Bird built a forge on Hay creek, near its entrance into the Schuylkill, where Birdsboro now stands, in Berks county. Hopewell furnace, on French creek, in Union township, Berks county, is said by tradition to have been built by William Bird in 1759, but it may have been built by his son, Mark Bird, about 1765. As early as 1760 William Bird built Roxborough furnace, in Heidelberg township, Berks county, the name of which furnace was subsequently changed to Berkshire. Berkshire furnace manufactured shot and shells for the Continental army.

As early as 1742 John Taylor built a forge on Chester creek, in Thornbury township, Delaware county, where Glen Mills now stand, which he called Sarum iron works. In 1746 he added a rolling and slitting mill. These works are said to have been carried on with energy by Mr. Taylor until his death in 1756. Acrelius, writing about the time of Mr. Taylor's death, says: "Sarum belongs to Taylor's heirs, has three stacks, and is in full



George Mifflin Dallas

United States senator, 1831-1833; attorney-general of Pennsylvania, 1833-1835; minister to Russia, 1837-1839; vice-president of the United States, 1845-1849; minister to Great Britain, 1856-1861

blast." Taylor's rolling and slitting mill was the first in Pennsylvania. The works were in operation until after the Revolution.

There was a forge on Crum creek, about two miles above the town of Chester, in Delaware county, which was built by John Crosby and Peter Dicks about 1742. Peter Kalm, the Swede, in his "Travels into North America," written in 1748 and 1749, thus describes it: "About two English miles behind Chester I passed by an iron forge, which was to the right hand by the road side. It belonged to two brothers, as I was told. The ore, however, is not dug here, but thirty or forty miles from hence, where it is first melted in the oven and then carried to this place. The bellows were made of leather, and both they and the hammers and even the hearth [were] but small in proportion to ours. All the machines were worked by water. The iron was wrought into bars."

Peter Kalm states that at Chichester (Marcus Hook) "they build here every year a number of small ships for sale, and from an iron work which lies higher up in the country they carry iron bars to this place and ship them."

In 1743 William Branson, of Philadelphia, erected two forges on Conestoga creek, near Churchtown, in Lancaster county, which he called Windsor, and which were famous forges in their day.

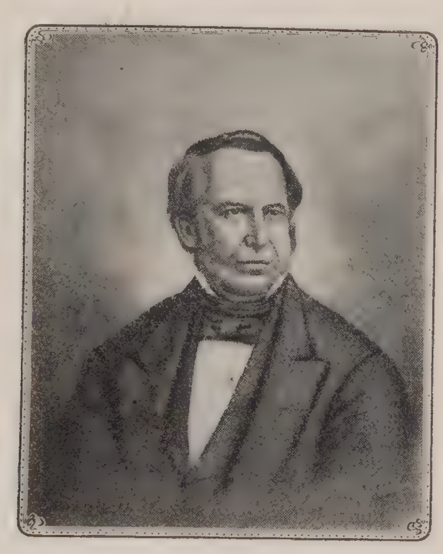
Charming forge, on Tulpehocken creek, in Berks county, was built in 1749. It was at first styled *Tulpehocken Eisen Hammer.* In 1774 it was purchased by George Ege. About 1777 Mr. Ege purchased from Congress the services of thirty-four Hessian prisoners, for the purpose of cutting a channel through a bed of rock to supply with water power a slitting mill which he had previously erected. The mill-race was about 100 yards long, from 12 to 20 feet deep, and about 20 feet wide, and was cut through a mass of solid slate rock as smoothly as if done with a broad-axe. It was used until 1887, when the forge was abandoned.

In 1751 we find a forge called Mount Joy, at the mouth of East Valley creek, on the Chester county side of the creek, one-third of which was advertised for sale on the 4th of April of that year by Daniel Walker and the remaining two-thirds on the 26th of September of the same year by Stephen Evans and Joseph Williams. In Daniel Walker's advertisement it was stated that the forge was "not so far distant from three furnaces." Pennypacker, in his "Annals of Phœnixville and its Vicinity," says that the ancestor of the Walker family had come from England with William Penn and "at a very early date had erected the small forge on the Valley creek." It is clear, however, that in 1751 Daniel Walker owned only one-third of the forge, Evans and Williams owning the remainder. In 1757, as we learn from Mrs. James, the forge was sold to John Potts by the executors of Stephen Evans. In 1773 it was owned by Joseph Potts, at which time it continued to be legally designated as Mount Joy forge, although for some time previously it had been popularly known as Valley forge. In that year Joseph Potts sold one-half of the forge to Colonel William Dewees. The forge was destroyed by the British in 1777, just prior to Washington's occupation of the vicinity for winter quarters. It was rebuilt after the Revolution on the Montgomery side of the creek, probably by David and Isaac Potts.

In his "History of New Sweden" Israel Acrelius, who resided in this country from 1750 to 1756, says: "Pennsylvania, in regard to its iron works, is the most advanced of all the American colonies."

At an uncertain period before 1750 William Branson and others established on French creek the Vincent steel works for the manufacture of cemented steel. Acrelius describes them, but they were not active at the time of his visit. Mrs. James says that they were the first steel works in Pennsylvania and were built by Samuel Nutt prior to 1734, but William Branson was probably associated with him in this enterprise. Branson appears to have owned the works in 1737. Samuel Nutt, in his will, written in that year, makes no mention of them. About 1736 Nutt and

Branson built a new Reading furnace. Acrelius says: "At French creek, or Branz's works, there is a steel furnace, built with a draught-hole, and called an 'air-oven.' In this iron bars are set at the distance of an inch apart. Between them are scattered horn, coal-dust, ashes, etc. The iron bars are thus covered with blisters, and this is called 'blister-steel.' It serves as the best steel to put upon edge-tools. These steel works are now said to be out of operation."



William Bigler

Editor; elected State senator, 1841; governor, 1851-54; United States senator, 1855; delegate-at-large to State Constitutional Convention, 1873

In 1750 there was a "plating forge to work with a tilt-hammer" in Byberry township, in the northeastern part of Philadelphia county, the only one in the province, owned by John Hall, but not then in use. In the same year there were two steel furnaces in Philadelphia, one of which, Stephen Paschall's, was built in 1747 and stood on a lot on the northwest corner of Eighth and Walnut streets; the other furnace was owned by William Branson and was located near where Thomas Penn "first lived, at the upper end of Chestnut street." These furnaces were for the production of blister steel. There appear to have been no other steel furnaces in the province in 1750. The Vincent steel works had probably been abandoned at this time.

Elizabeth furnace, near Brickersville, on a tributary of Conestoga creek, in Lancaster county, was built about 1750 by John Huber, a German. In 1757 Huber sold it to Henry William Stiegel and his partners, who built a new and larger furnace, which was operated until 1775, when it passed into the hands of Daniel Benezet, who leased it to Robert Coleman, who subsequently bought it and who was for many years the most prominent ironmaster in Pennsylvania.

After Elizabeth furnace came into the possession of Robert Coleman he made shot and shells for the Continental army, and some of the transactions which occurred between him and the Government in settlement of his accounts for these supplies are very interesting. Under date of October 26, 1780, the following entry is made by Mr. Coleman to the credit of the United States: "By cash, received of William Thorne, Pay-Master, 107,319,15-90 dolls, old emission, exchange 73 for one, £551,5,11." In August, 1781, another credit is entered of "328 dolls., new emission, three for one," which shows an appreciation of the currency. Two months later exchange was at two and a half for one. On November 16, 1782, appears the following entry: "By cash, being the value of 42 German prisoners of war, at £30 each, £1,260;" and on June 14, 1783, the following: "By cash, being the value of 28 German prisoners of war, at £30 each, £840." In a foot note to these credits Robert Coleman certifies "on honour" that the above 70 prisoners were all that were ever secured by him, one of whom being returned is to be deducted when he produces the proper voucher.

Martic forge, on Pequea creek, near the present village of Colemanville, in Lancaster county, was built in 1755, and was last in operation in 1883. Robert S. Potts, one of the last owners of this forge, who died in 1886, wrote us in that year: "There used to be a small rolling mill near the forge that stopped running some fifty years ago. There was also a charcoal furnace called Martic six miles east of the forge. The old cinder bank is still visible. During the Revolution round iron was drawn under the hammer at the forge and bored out for musket barrels at a boring mill, in a very retired spot, on a small stream far off from any public road, doubtless with a view to prevent discovery by the enemy. The site is still visible." Negro slaves were employed from the beginning in hammering iron at Martic forge, and it is a curious fact that negroes continued to be the principal workmen down to the abandonment of active operations in 1883. The forge was finally abandoned in 1886. A long row of stone houses was occupied by the negro workmen.

Cornwall furnace, built by Peter Grubb in 1742, was located within the limits of the since celebrated Cornwall ore hills, in Lebanon county. The Cornwall ore hills were conveyed by John Penn, Thomas Penn, and Richard Penn, proprietors-in-chief of the province of Pennsylvania and counties of Newcastle, Kent, and Sussex on the Delaware, by their warrant dated London, May 8, 1732, to Joseph Turner, of Philadelphia, for five hundred pounds, money of Pennsylvania. The grant embraced 300 acres. Turner assigned the entire tract to William Allen, April 5, 1734, and on the 28th and 29th of November, 1737, Allen assigned the same to Peter Grubb, to whom a patent was issued August 2, 1745. Peter Grubb died intestate about 1754, and his estate descended to his sons Curtis Grubb and Peter Grubb, Curtis receiving two-thirds under the intestate law of that day and Peter one-third. Both sons were colonels in the Revolution. On June 28, 1783, Curtis conveyed a one-sixth interest to Peter Grubb, Jr., his son.

By articles of agreement, dated September 26, 1785, Peter Grubb, Jr., grandson of the first-named Peter Grubb, and son of Curtis Grubb, sold to Robert Coleman his share of the Cornwall ore hills, Cornwall furnace, and appurtenances, reserving the right for a sufficient quantity of ore for one furnace, which right is held and exercised to-day by the proprietors of Robesonia furnace, in Berks county. The deed for the share sold to Robert Coleman, signed by Peter Grubb, Jr., and Mary, his wife, is dated May 9, 1786. After that year Robert Coleman, through successive purchases from the Grubbs, acquired four additional sixths of the property originally conveyed by the Penns to Joseph Turner. At his death in 1825 his estate was devised to his four sons, and subsequently, under various partitions, the interest of Robert Coleman was vested in his grandsons, Robert and G. Dawson Coleman, and in the heirs of his grandsons, William and Robert W. Coleman, while one-sixth still continued in 1876 as the property of the descendants of Peter Grubb. Neither the Coleman nor the Grubb family limited its operations to the Cornwall "ore banks and mine hills," but each became the owner of many other iron properties.

Butler

From an old print

During the Revolution Cornwall furnace cast cannon and shot and shells for the Continental army. It was in operation as late as 1882 and for a few years afterwards, but is now abandoned.

The following table shows the production of iron ore, in gross tons, by the Cornwall mines from 1864 to 1901. The production from 1740 down to February, 1864, amounted to 2,524,908 tons. The figures for 1864 are for 11 months only.

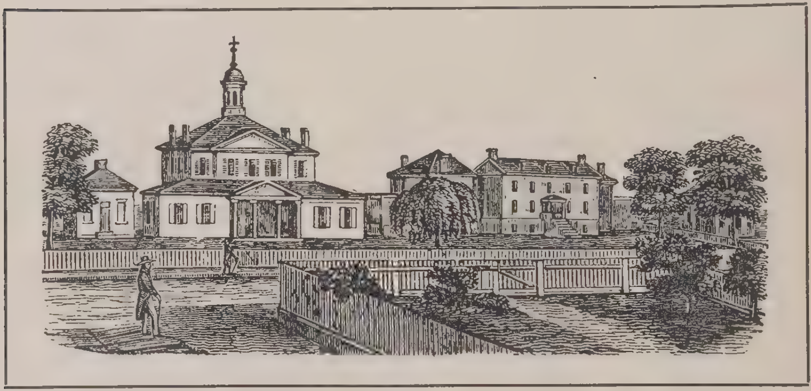
Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.	Years.	Gross tons.
1864...	165,915	1874...	112,429	1884...	412,320	1894...	371,710
1865...	114,803	1875...	98,925	1885...	508,864	1895...	614,598
1866...	216,660	1876...	137,902	1886...	688,054	1896...	463,059
1867...	202,755	1877...	171,589	1887...	667,210	1897...	419,878
1868...	165,843	1878...	179,299	1888...	722,917	1898...	584,342
1869...	173,429	1879...	268,488	1889...	769,020	1899...	763,152
1870...	174,408	1880...	231,173	1890...	686,302	1900...	558,713
1871...	176,055	1881...	249,050	1891...	663,755	1901...	747,012
1872...	193.317	1882...	309,681	1892...	634,714	....	....
1873...	166,782	1883...	363,143	1893...	439,705	....	....

There was a bloomary forge on a branch of Codorus creek, in Jackson township, York county, in 1756, owned by Peter Dicks, of Chester county. Spring forge, in York county, was built in 1770 to take the place of Peter Dicks's bloomary. It was active for many years.

The first blast furnace west of the Susquehanna was built in 1762 and 1763 on Furnace creek, in West Manheim township, York county, by George Ross and Mark Bird. It was called Mary Ann furnace. In 1763 the owners petitioned the court of York county to open a public road from their furnace "lately built at a great expense" to the road from the Conewago settlement to Baltimore, and in 1766 they petitioned the court to open a road from their furnace to the Monocacy road at Frederick Eichelberger's tavern. A great many stoves were cast at this furnace, and during the Revolution it cast many shot and shells.

George Ross was one of the signers of the Declaration of Independence. About 1765 a furnace and forge were erected by William Bennett on the south side of Codorus creek, near its junction with the Susquehanna, in Hellam township, York county. The furnace was in operation during the Revolution. After 1810 these works were known as Codorus forge.

Pine Grove furnace, in Cumberland county, was built in 1770 by Thornburg & Arthur. About the year 1770 a furnace was built at Boiling Springs, in this county, forming the nucleus of the Carlisle iron works, which afterwards, about 1782, included a forge, a rolling and slitting mill, and a steel furnace.



Town Buildings at Doylestown about 1840

From an old print

During the Revolution the Continental Congress established and maintained an armory at Carlisle, where muskets, swords, and "wrought iron cannon of great strength" were manufactured. In 1776, and throughout the war, anthracite coal was taken in arks from the Wyoming mines above Wilkes-Barre down the Susquehanna to the armory at Carlisle. The first cargo sent down the Susquehanna is said to have constituted the first shipment of anthracite coal that was made in this country.

The early Pennsylvania furnaces made from ten to twenty-five tons of pig iron or castings in a week, the highest limit being seldom attained. As all furnaces were blown by water power, which often failed in the summer season, a fair yield by an ordinary furnace in a year was 500 tons of iron. The size of the furnaces seldom exceeded twenty-five feet in height and seven feet in width at the bosh. The fuel used was exclusively charcoal and the blast was always cold. Only one tuyere was used. Leather bellows were at first used, but wooden bellows, or tubs, were afterwards substituted. These tubs were still in use in connection with some of our oldest furnaces as late as 1878. Warwick and Cornwall furnaces were each over thirty feet high. They retained their long leather bellows until the nineteenth century. These and some other furnaces each yielded as much as 1,000 tons of pig iron and castings annually. Pig iron sold at about $15 a ton at the furnace. Castings cost about twice as much as pig iron. The forges made from sixty to one hundred and fifty tons of bar iron in a year, which sold at from $75 to $100 a ton.

Most of the bar iron made in the eighteenth century in Pennsylvania was hammered at the forges out of blooms made from pig iron. But little was made from blooms produced in the bloomary fire directly from the ore, as was the New England and New Jersey custom. The Pennsylvania furnaces were also employed in making castings, such as stoves, pots, kettles, etc. The first bar iron made in the province by Thomas Rutter, Samuel Nutt, and others was made in forges, sometimes called bloomary forges, directly from the ore. During the Revolution cannon and cannon balls were cast at many of the Pennsylvania furnaces.

The bar iron and castings made in the Schuylkill valley during the eighteenth century were taken down the river to Philadelphia in boats, which were poled back to their starting points with great labor.

After the Revolution the manufacture of iron in Pennsylvania was rapidly extended into the interior of the State. Bishop says that in 1786 there were seventeen furnaces, forges, and slitting-mills within thirty-nine miles of Lancaster. About 1789 there were fourteen furnaces and thirty-four forges in operation in Pennsylvania, according to a list published by Mrs. James. In 1791 the number of furnaces had increased to sixteen and of forges to thirty-seven. In 1796 the slitting and rolling mills were said to roll 1,500 tons per annum. The articles of iron and steel manufacture at this time were of great variety, including stoves, pots, kettles, plow irons, sheet iron, nails, spikes, cannon balls, scythes, axes, saws, etc. At this period there were many furnaces and forges in the Schuylkill valley. In 1838 there were in existence within a radius of fifty-two miles of Lancaster 102 furnaces, forges, and rolling mills.

Monument at Junction of Pennsylvania, Maryland and Delaware

Erected in 1849. Engraved for this work from a negative by D. E. Brinton

The counties on the west of the Susquehanna river contained many iron enterprises soon after the close of the Revolution. In 1805 there were two forges at work in York county, one of which was Spring forge and the other was Codorus forge. Castle Fin forge, at first called Palmyra forge, on Muddy creek, in York county, was built in 1810. In its day Castle Fin forge was a very prominent enterprise. In 1850 there were five furnaces and three forges in this county.

Liberty forge, on Yellow Breeches creek, in Cumberland county, was built in 1790 and was still active in 1876. Other forges in Cumberland county were built prior to 1800. Cumberland furnace, ten miles southwest of Carlisle, on Yellow Breeches creek, was built in 1794. Holly furnace, at Papertown, in the same county, is said to have been built in 1795.

The first furnace in Franklin county was Mount Pleasant, in Path valley, near Loudon, which was built in 1783 by three brothers, William, Benjamin, and George Chambers. A forge was erected by them about the same time. Soundwell forge, on Conodoguinet creek, at Roxbury, sixteen miles north of Chambersburg, was built in 1798 and was active as late as 1857. Carrick forge, four miles from Fannettsburg, was built in 1800 and was in operation as late as 1856. Carrick furnace was built at a later day. Loudon furnace and forge, in Franklin county, were built about 1790 by Colonel James Chambers and abandoned about 1840. Valley forge, near Loudon, in this county, was built in 1804. A furnace of the same name was built near the forge at a later day. Mont Alto furnace, in the same county, was built in 1807. Two forges of the same name, about four miles from the furnace, were built in 1809 and 1810. There were a few other charcoal furnaces and forges in this county. Early in the nineteenth century nails and edge tools were made in large quantities at Chambersburg and in its vicinity.

About 1806 Jacob M. Haldeman removed from Lancaster county to New Cumberland, at the mouth of Yellow Breeches creek, on the Susquehanna, in Cumberland county. He purchased a forge at this place and added a rolling and slitting mill, which were operated until about 1826, when they were abandoned.

In 1785 Henry Fulton established a "nailery" in Dauphin county, probably at Harrisburg. It is said to have been "only a little remote from a smithy." In 1805 there were two furnaces and two forges in this county. The manufacture of iron had a very early beginning in the Susquehanna valley north of Harrisburg. About 1778 a bloomary forge was built on Nanticoke creek, near the lower end of Wyoming valley, in Luzerne county, by John and Mason F. Alden. Another bloomary forge was built in 1789 on the Lackawanna river, about two miles above its mouth, by Dr. William Hooker Smith and James Sutton. Still another bloomary forge was built in 1799 or 1800, on Roaring brook, at Scranton, then known as Slocum's Hollow, by two brothers, Ebenezer and Benjamin Slocum. All these bloomaries continued in operation until about 1828. Their products were taken down the Susquehanna in Durham boats.

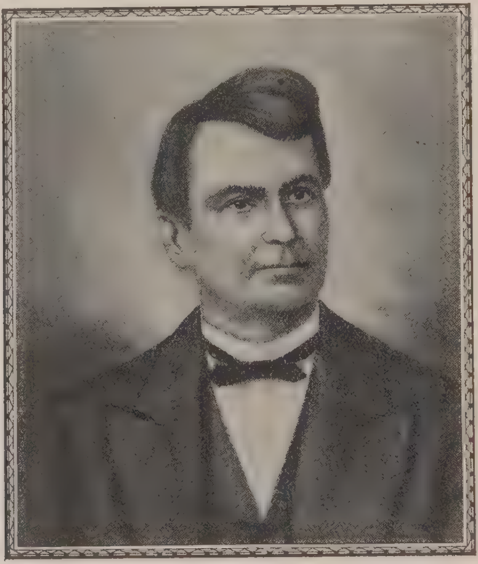
Esther furnace, about three miles south of Catawissa, on East Roaring creek, in Columbia county, was built in 1802 by Michael Bitter & Son, who "cast many stoves." Catawissa furnace, on Furnace run, near Mainville, in Columbia county, was built in 1815 and a forge was built at the same place in 1824, on Catawissa creek. An early furnace in Lycoming county was built in 1820, four miles from Jersey Shore, and named Pine Creek. Washington furnace, on Fishing creek, at Lamar, in Clinton county, was built in 1811. It was in blast in 1875. In a sketch of Clearfield county in Egle's "History of Pennsylvania" it is stated that "in 1814 Peter Karthaus, a native of Hamburg, Germany, but afterwards a resident merchant of Baltimore, established a furnace at the mouth of the Little Moshannon, or Mosquito creek, in the lower end of the county." This furnace was operated with partial success for several years.

The earliest information obtainable of the erection of any iron works in Mifflin county is found in the court records of that county for August, 1795. At a court held in that month a petition was presented asking for a road "from Freedom forge, thence the nearest and best way to the river Juniata near to, or at, McClellan's landing." The forge stood on the present site of the Logan iron and steel works, at Logan, on Kishacoquillas creek. The landing mentioned was at the mouth of the creek, now within the limits of the borough of Lewistown. The forge was sold in 1812 to Miller, Martin & Co., who began the erection of a furnace in that year. On November 12, 1812, they advertised in the "Juniata Gazette" for workmen, "as they are engaged in building a furnace at Freedom forge." The forge, built as early as 1795, was continued until 1878. In 1832 there were three furnaces and one forge in Mifflin county, and in 1850 there were five furnaces and two forges.

In June, 1797, General William Lewis, of Berks county, began the purchase of lands on Brightsfield run and the Juniata river, in Mifflin county, intending to build a furnace. In a mortgage dated June 2, 1798, the furnace tract and ore-bank lot are mentioned. In 1798 William Lewis is assessed on 430 acres of land and a furnace as an ironmaster. The furnace was known as Hope furnace. In 1804 General Lewis built Mt. Vernon forge on Cocalamus creek, below Millerstown, in Perry county, which was operated with the furnace.

Juniata furnace, three miles from Newport, in Perry county, was built in 1808 by David Watts, of Carlisle. There was a very early forge in Juniata county, built in 1791 on Licking creek, two miles west of Mifflintown, by Thomas Beale and William Sterrett. The pig iron for this forge was obtained mainly from Centre furnace, but some was brought from Bedford furnace.

The first blast furnace in the Juniata valley was Bedford furnace, on Black Log creek, built in 1787 or 1788 on the site of the present town of Orbisonia, in Huntingdon county, by the Bedford Company, composed of Edward Ridgely, Thomas Cromwell, and George Ashman. It made from eight to ten tons of pig iron a week. Lytle, in his "History of Huntingdon County," says that it was built mostly of wood and was five feet wide at the bosh and was either fifteen or seventeen feet high. A forge was subsequently built on Little Aughwick creek, four miles southwest of the furnace, by the Bedford Company, which supplied the neighborhood with horseshoe iron, wagon tire, harrow teeth, etc. Large stoves and other utensils were cast at Bedford furnace. The entire product of the furnace was converted into castings and bar iron. At the Philadelphia Exhibition in 1876 there was exhibited a stove-plate which was cast at this furnace in 1792. On the 10th of September, 1793, Thomas Cromwell, for the company, advertised in the "Pittsburgh Gazette" castings and bar iron for sale at Bedford furnace. The first American bar iron ever taken to Pittsburg is said to have been made at Bedford forge. There was then no wagon road to Pittsburg. "In the forge the pig iron of the furnace was hammered out into



James Pollock

Congressman, 1844; president judge Eighth Judicial District, 1850; governor, 1855-1858; 1861, director United States mint, Philadelphia; naval officer of Philadelphia, 1880-1884 bars about six or eight feet long, and these were bent into the shape of the letter U and turned over the backs of horses and thus transported over the Alleghanies to Pittsburg."

Bar iron and castings from Bedford furnace and other iron works in the Juniata valley were taken down the Juniata river in arks, many of them descending to as low a point as Middletown, on the Susquehanna, whence the iron was hauled to Philadelphia. Much of the iron of the Juniata valley was also sent to Baltimore in arks down the Susquehanna river.

Bedford furnace was certainly in operation before 1790, as on the 2d day of March of that year Hugh Needy entered into an agreement with the company to deliver twenty-eight ten-gallon kettles and seven Dutch ovens, the whole weighing 12 cwt., 3 qrs., and 21 lbs., to Daniel Depue, "on or near the Monongahela river, near Devor's Ferry, in eight days ensuing the date hereof." These articles were carried on pack-horses. The forge appears to have been built in 1791, as is shown by an itemized statement of iron made by the company from "the time the forge started" in that year until October 12, 1796, the product in these six years being 497 tons, 8 cwt., 2 qrs., and 26 lbs.

Centre furnace, located on Spring creek, in Centre county, was the second furnace erected in the Juniata valley or near its boundaries. It was built in the summer of 1791 by Colonel John Patton and Colonel Samuel Miles, both Revolutionary officers. The first forge in Centre county was Rock forge, on Spring creek, built in 1793 by General Philip Benner, who subsequently originated other iron enterprises in the same county and became an extensive shipper of Juniata iron.

Barree forge, on the Juniata river, in Huntingdon county, was built about 1794 by Bartholomew & Dorsey, to convert the pig iron of Centre furnace into bar iron. Huntingdon furnace, on Warrior's Mark run, in Franklin township, was built in 1796, but after one or two blasts it was removed a mile lower down the stream. A forge called Massey, on Spruce creek, connected with Huntingdon furnace, was built about 1800. Tyrone forges, on the Juniata, were built by the owners of Huntingdon furnace, the first of the forges in 1804. Gordon, in 1832, in his "Gazetteer of the State of Pennsylvania," stated that these forges, with a rolling and slitting mill and nail factory attached, formed "a very extensive establishment," owned by Messrs. Gloninger, Anshutz & Co. "The mill rolls about 150 tons, 75 of which are cut into nails at the works, 50 tons are slit into rods and sent to the West, and about 25 tons are sold in the adjoining counties." Juniata forge, at Petersburg, was built about 1804 by Samuel Fahnestock and George Shoenberger, the latter becoming sole owner in 1805. George Shoenberger died in 1814 or 1815. His only son, Dr. Peter Shoenberger, succeeded to the ownership of his iron enterprises. Coleraine forges, on Spruce creek, were built in 1805 and 1809 by Samuel Marshall. There have been many forges on this creek.

Many other charcoal furnaces and forges and a few rolling mills were built in the upper part of the Juniata valley before 1850. In 1832 there were in operation in Huntingdon county, which then embraced a part of Blair county, eight furnaces, ten forges, and one rolling and slitting mill. Each of the furnaces yielded from 1200 to 1600 tons of iron annually. In the same year an incomplete list enumerated eight furnaces and as many forges in Centre county. Etna furnace and forge, on the Juniata, in Catharine township, now Blair county, were built in 1805 by Canan, Stewart & Moore. The furnace was the first in Blair county. Cove forge, on the Frankstown branch of the Juniata, was built between 1808 and 1810 by John Rover. Allegheny furnace was built in 1811 by Allison & Henderson, and was the second furnace in Blair county.

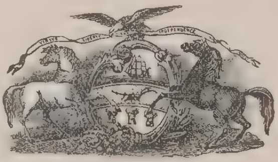
For many years after the beginning of the nineteenth century Huntingdon and Centre counties constituted the principal iron producing district in the country. This prominence in the production of iron was maintained until after 1842, when the tariff of that year and the discovery that iron could be made with anthracite and bituminous coal enabled other districts in the State and country to wrest from these counties their iron sceptre. In 1850 there were in these two counties and in Blair county (formed out of Huntingdon and Bedford in 1846) and in Mifflin county forty-eight furnaces, forty-two forges, and eight rolling-mills, nearly all of which were in Huntingdon and Centre counties.

Much of the iron made in the Juniata valley during the palmy days of its iron industry was sold at Pittsburg, first in the form of castings, afterwards both in pigs and bars, and finally chiefly in the form of blooms. Before the completion of the Pennsylvania Canal and the Portage Railroad it was transported with great difficulty. Bar iron from Centre county was at first carried on the backs of horses to the Clarion river and was then floated on boats and arks to Pittsburg. Pig and bar iron from Huntingdon county were hauled over the Frankstown road to Johnstown and thence floated to Pittsburg by way of the Conemaugh river. Subsequently blooms were sent to Pittsburg from Huntingdon county by wagon. "Juniata iron" was also largely sold in eastern markets, the Juniata and Susquehanna rivers furnishing an outlet before the building of the Pennsylvania Canal. It was noted throughout the country for its excellence.

The following advertisement appeared in a Pittsburg newspaper in 1813. The advertiser was then operating the first rolling mill built at Pittsburg. Blooms were his raw material.

> WAGGONS WANTED.—The subscriber wishes to employ from 30 to 50 waggons, for three or four trips to the ironworks near Belfont, Centre county; and would be anxious to engage 20 or 30 out of the above number to haul by the year. A very considerable advance will be made on the former rate of carriage. This added to the low price of feed this season holds out greater inducements to embark in this business than at any former period. Applications to me here; on which I will give my orders, and will engage to pay for any delay which may arise to the waggoners at the different forges.
>
> C. COWAN, September 9, 1813.

In 1828, before the Pennsylvania Canal was completed, the hauling of blooms by wagon to Pittsburg was still an important business. In the "Blairsville Record" for January 31, 1828, Mulhollan & McAnulty advertise for teams to haul blooms from Sligo iron works, in Huntingdon county, to Blairsville, offering $15 per ton. This hauling was done over the Huntingdon, or Northern, Turnpike, which had been built only a few years before and which passed through Huntingdon, Hollidaysburg, Ebensburg, and Blairsville to Pittsburg. A notable bridge over the Conemaugh at Blairsville was completed in 1821. It was a single-arch bridge, 300 feet long. Soon after the canal was finished and the Portage Railroad from Hollidaysburg to Johnstown was completed, the latter in 1834, the shipment of Juniata blooms to Pittsburg greatly increased.



Arms, 1855

Steel was made at Caledonia, near Bedford, for several years before the close of the eighteenth century. It was made by William McDermett, a native of Scotland, and was cemented steel.

The first iron manufactured west of the Alleghany mountains was made in Fayette county, Pennsylvania. F. H. Oliphant, of Uniontown, awards to John Hayden, of Fayette county, the honor of having made "the first iron in a smith's fire" as early as 1790. "It was about as big as a harrow-tooth." The first furnace west of the Alleghanies was, however, built by Turnbull & Marmie, of Philadelphia, on Jacob's creek, between Fayette and Westmoreland counties, on the Fayette county side of the creek, a few miles above its entrance into the Youghiogheny river. It was first blown in on November 1, 1790, and produced a superior quality of metal both for castings and bar iron, some of it having been tried the same day in a forge which the proprietors had erected at the same place. The furnace and forge were called the Alliance iron works. Craig, in his "History of Pittsburgh" (1851), gives an extract from a letter written by Major Craig, Deputy Quartermaster General and Military Storekeeper at Fort Pitt, to General Knox, dated January 12, 1792, as follows: "As there is no six-pound shot here I have taken the liberty to engage four hundred at Turnbull & Marmie's furnace, which is now in blast." The ruins of this furnace may still be seen.

Union furnace, on Dunbar creek, four miles south of Connellsville, in Fayette county, was built by Isaac Meason in 1790 and was put in blast in March, 1791. It was succeeded in 1793 by a larger furnace of the same name, built near the same site by Isaac Meason, John Gibson, and Moses Dillon. An advertisement in the "Pittsburgh Gazette," dated April 10, 1794, mentions that Meason, Dillon & Co. have for sale "a supply of well-assorted castings, which they will sell for cash at the reduced price of £35 per ton ($93.33)." There was a forge connected with this furnace called Union forge. Two Dunbar furnaces now stand near the site of the original Union furnace.

In 1792 John Hayden and his partner, John Nicholson, built a bloomary forge on George's creek, a few miles south of Uniontown, and in 1797 John Hayden built Fairfield furnace, also on George's creek. John and Andrew Oliphant and Nathaniel Breading bought an interest in this furnace in 1798 and in a few years the Oliphants became its sole owners. Fairchance furnace, on George's creek, six miles south of Uniontown, was built in 1804 by John Hayden. J. & A. Oliphant bought it about 1805. It was rebuilt two or three times and kept in operation until 1887, when it was abandoned and torn down. The Oliphants built Sylvan forges, on George's creek, below Fairfield and Fairchance furnaces. It is said that while the Oliphants operated Fairfield furnace they cast a quantity of shot which was used by General

Jackson's artillery in the battle of New Orleans. It was shipped down the Monongahela, the Ohio, and the Mississippi rivers.

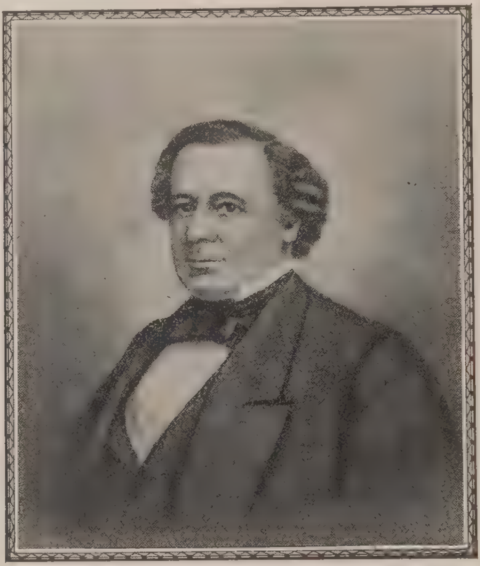
Rolling and slitting mills, for the manufacture of sheet iron and nail rods, were established west of the Alleghanies soon after the first furnace and forge was built in 1790. Prior to 1794 Jeremiah Pears built a forge at Plumsock, in Menallen township, Fayette county, which was the forerunner of a rolling and slitting mill built by Mr. Pears at the same place before 1804. In 1805 the rolling and slitting mill and the remainder of Mr. Pears's property were sold by the sheriff. This was probably the first rolling and slitting mill erected west of the Alleghenies. In 1805 a rolling and slitting mill was built by John Gibson on the right bank of the Youghiogheny river, below Connellsville. Cramer's "Pittsburgh Almanac" for 1812 says that in 1811 there were three such mills in Fayette county. Another was just over the Pennsylvania line in the present State of West Virginia and is described in the Almanac for 1813, issued in 1812, as follows: "Jackson & Updegraff, on Cheat river, have in operation a furnace, forge, rolling and slitting mill, and nail factory—nails handsome, iron tough." The Cheat river enterprise was on the road from Uniontown to Morgantown, about three miles south of the Pennsylvania State line, and eight miles north of Morgantown. Like all the rolling and slitting mills of that day and of many preceding days the Cheat river mill neither puddled iron nor rolled bar iron, but rolled only sheet iron and nail plates with plain rolls from blooms heated in a hollow fire and hammered under a tilt-hammer. The nail plates were slit into nail rods by a series of revolving discs.

In 1805 there were five furnaces and six forges in Fayette county. In 1811 the county had ten furnaces, one air furnace, eight forges, three rolling and slitting mills, one steel furnace, and five trip-hammers. At a later date there were twenty furnaces in this county. Fayette county was a great iron centre at the close of the eighteenth century and far into the nineteenth century. For many years Pittsburg and the Ohio and Mississippi valleys were almost entirely supplied by it with all kinds of castings and with hammered bar iron. In 1804 a large order for sugar kettles, to be used on the sugar plantations of Louisiana, was filled at Union furnace. Long before 1850, however, the fires in most of the furnaces and forges of Fayette county were suffered to die out. In 1849 only four of its furnaces were in blast. Other furnaces, to use coke, and other iron and steel enterprises have since been built within its boundaries, but its fame as a centre of the iron industry has departed. In its stead it now enjoys the reputation of being the home of the famous Connellsville coke. Connellsville, on the Youghiogheny, was a shipping point for Fayette county iron.

The steel furnace above referred to as existing in 1811 was at Bridgeport, adjoining Brownsville, was owned by Truman & Co., and made good steel. It was known as the Brownsville steel factory. In 1811 Truman & Co. advertised that they had for sale "several tons of steel of their own converting, which they will sell at the factory for cash, at 12 dollars per cwt., and 20 dollars per faggot for Crowley." The latter was an English brand. Truman & Co. made cemented steel.

The first nail factory west of the Alleghanies was built at Brownsville, about 1795, by Jacob Bowman, at which wrought nails were made by hand in one shop and cut nails were made by machines in another. These machines were worked by the foot of the workman, while his hands guided the flat and thin bar of iron from which the nails were cut.

The first rolling mill erected in the United States to puddle iron and roll iron bars was built in 1816 and 1817 on Redstone creek, about midway between Connellsville and Brownsville, at a place called Middletown, better known as Plumsock, in Fayette county, on the site of Jeremiah Pears's enterprise which has previously been described. The rolling mill was undertaken by Colonel Isaac Meason, of Union furnace, who then had forges at Plumsock. This mill was built "for making bars of all sizes and hoops for cutting into nails." Mr. Oliphant says that "the iron was refined by blast and then puddled. It was kept in operation up to 1824, the latter part of the time by Mr. Palmer." A flood in the Redstone caused its partial destruction. The machinery of the mill was subsequently taken to Brownsville.



William Fisher Packer

Editor; auditor general, 1824-1845; speaker State house, 1847-48; State senator, 1849; first president of Susquehanna Railroad company; governor, 1858-1861

Careful inquiry fails to discover the existence in the United States of any rolling mill to roll bar iron and puddle pig iron prior to the enterprise at Plumsock in 1816. Ralph Crooker, of the Bay State iron works, at Boston, the oldest rolling mill superintendent in the United States, says that the first bar iron rolled in New England was rolled at the Boston iron works, on the Mill

Dam at Boston, in 1825, and that the first puddling done in New England was at Boston, on the Mill Dam, by Lyman, Ralston & Co., in 1835. We cannot learn of any mill in Eastern Pennsylvania that either puddled iron or rolled iron bars as early as 1816.

Isaac Meason, who did so much to develop the iron resources of Fayette county, was a native of Virginia. He died in 1819. He was a member of the Supreme Executive Council of Pennsylvania in 1783, and for many years prior to his death he was an associate judge of Fayette county.

Westmoreland county speedily followed Fayette county in the manufacture of iron. Westmoreland furnace, on a branch of Loyalhanna creek, near Laughlinstown, in Ligonier valley, was built in 1794 by Christopher Lobingier & Brother. In 1798 the furnace was sold to John Probst, who operated it for about four years. On the 1st of August, 1795, George Anshutz, manager of Westmoreland furnace, advertised stoves and castings for sale. We have a stove plate cast at Westmoreland furnace in 1800 by John Probst and so marked in raised letters.

General Arthur St. Clair built Hermitage furnace, on Mill creek, two miles northeast of Ligonier, about 1802. It was managed for its owner by James Hamilton, and made stoves and other castings. It was in blast in 1806. In 1810 it passed out of the hands of General St. Clair and was idle for some time. In 1816 it was started again by O'Hara & Scully, under the management of John Henry Hopkins, afterwards Protestant Episcopal bishop of Vermont. In October, 1817, Mr. Hopkins left the furnace and it has never since been in operation. Its ruins may still be seen. General St. Clair died a very poor man in 1818, aged 84 years, and was buried at Greensburg.

Several other furnaces and a few forges were built in Westmoreland county soon after the pioneer furnaces above mentioned. One of the forges was Kingston forge, erected in 1811 on Loyalhanna creek, ten miles east of Greensburg, by Alexander Johnston & Co., and going into operation early in 1812. Alexander Johnston was the father of Governor William F. Johnston. He was born in Ireland in July, 1773, and died in July, 1872, aged 99 years.

The owners of the early furnaces in Westmoreland county, besides supplying local wants, shipped castings by boats or arks on the Youghiogheny, the Conemaugh, the Kiskiminitas, and the Allegheny rivers to Pittsburg, some of which found their way down the Ohio river to Cincinnati and Louisville. Subsequently they shipped pig iron by canal to Pittsburg rolling mills.

Shade furnace, in Somerset county, was built in 1807 or 1808 and was the first iron enterprise in this county. It stood on Shade creek, below the junction of Clear Shade and Dark Shade creeks, and was built by Gerehart & Reynolds on land leased from Thomas Vickroy. A sale was made about 1818 to Richards, Earl & Co., of New Jersey, who operated the furnace down to about 1830. In 1820 they built a forge, called Shade, below the furnace, which was operated by various persons for many years. In 1849 it made 30 tons of bars. The furnace was continued at intervals by various proprietors to the close of 1858. We have seen a stove which was cast at Shade furnace in 1818.

About 1811 Joseph Vickroy and Conrad Piper built Mary Ann forge, on Stony creek, about five miles below Shade furnace and half a mile below the mouth of Shade creek. Pig iron to supply this forge was sometimes packed on horseback from Bedford county, the horses taking salt from the Conemaugh salt works and bar iron as a return load.

Bar iron was shipped to Pittsburg from these forges. Much of the iron from the forges was hauled to Johnstown for shipment down the Conemaugh, but some of it was shipped on flat boats directly from the forges. Pig iron was also hauled to Johnstown from Shade furnace for shipment by flatboat to Pittsburg. Richard Geary, the father of Governor John W. Geary, was the manager of Mary Ann forge for about one year, and was supercargo of a load of bar iron which was shipped from the forge down the Stony creek and other streams to Pittsburg.

Several other furnaces and a few forges were built in Somerset county in the first half of the nineteenth century, but they have all disappeared.

The first iron enterprise in Indiana county was Indiana forge, on Findley's run, near the Conemaugh, built about 1837 by Henry and John Noble, who also built Indiana furnace as early as 1840. Both the furnace and forge were running in the last-named year. Pig iron for the forge was at first obtained from Alleghany furnace, in Blair county. Some iron ore for the furnace was obtained from the Alleghany furnace mines and brought to the furnace by the Pennsylvania Canal and Portage Railroad. About 1837 John Noble owned a farm of about 200 acres in the heart of the present city of Altoona, which he sold to David Robinson, of Pleasant Valley, for $4,500, taking in payment the contents of Mr. Robinson's country store, which he removed to Findley's run and added to the capital stock of Henry and John Noble. The Altoona farm is now worth many millions of dollars. A few other furnaces were soon built in this county, but all the Indiana furnaces and its solitary forge have long been abandoned.

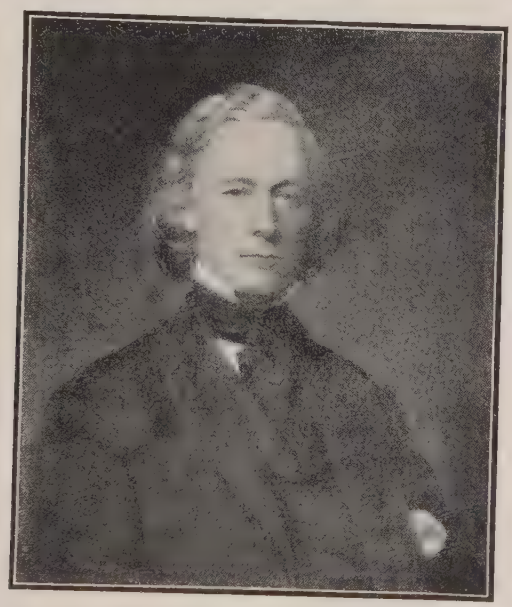
About 1809 John Holliday built a forge on the north bank of the Stony creek, near the mouth of Bedford street, in Johnstown, which was soon known as Cambria forge, Cambria county having only recently been organized. Like all the iron enterprises of that day, the power used in operating the forge was water power and the fuel used was charcoal. A dam was built across the Stony creek above the forge. In 1811, or about that year, the Stony creek dam was washed away, and soon afterwards the forge was removed to the Conemaugh river, where it was operated down to about 1822, Rahm & Bean, of Pittsburg, being the lessees of the forge at this time. It was abandoned about this year. It was used to hammer bar iron out of Juniata pig iron and blooms. In 1817 Thomas Burrell, the proprietor, offered woodcutters "fifty cents per cord for chopping two thousand cords of wood at Cambria forge, Johnstown." This was the first iron enterprise in Cambria county.

About 1810 the second iron enterprise at Johnstown was established by Robert Pierson. It was a small nail factory. Mr. Pierson's nails were cut out of what was called "nail iron" with a machine worked by a treadle, but without heads, which were afterwards added by hand. The "nail iron" was obtained from the small rolling mills in the Juniata valley and was hauled over the Frankstown road. About 200 pounds of nails, valued at $30, were made at Johnstown in 1810, and probably by Mr. Pierson.

Cambria county has been noted as an iron centre since its first furnace, Cambria, was built by George S. King and others in 1842, on Laurel run, near Johnstown. It was followed in the next few years by five other charcoal furnaces. All these furnaces have been abandoned. The extensive works of the Cambria Iron Company, at Johnstown, were commenced in 1853 by a company of which Mr. King was the originator and Dr. Peter Shoenberger was a member. They were built expressly to make coke pig iron and to roll iron rails, the Pennsylvania Railroad, passing through Johnstown, having been completed from Philadelphia to Pittsburg in the preceding year. Dr. Shoenberger had previously become a half owner of Cambria furnace and a part owner of several other furnaces and of large tracts of land near Johnstown.

A furnace named Mary Ann was erected at an early day in Greene county. It was located on Ten-mile creek, opposite Clarksville, and about twenty miles from Uniontown. It was abandoned early in the nineteenth century. An advertisement for its sale, by "Samuel Harper, agent for the proprietors," dated July 23, 1810, styles it "The Iron Works," late the property of Captain James Robinson. It was probably built about 1800. Gordon, in his Gazetteer (1832), says that "there were formerly in operation on Ten-mile creek a forge and furnace, but they have long been idle and are falling to decay." This reference is to Robinson's works.

A blast furnace was built at Beaver Falls, Beaver county, then called Brighton, on the west side of Beaver river, in 1802, by Hoopes, Townsend & Co., and blown in in 1804. A forge was connected with it from the beginning and it was in operation in 1806, according to Cramer's "Pittsburgh Almanac." Both the furnace and the forge were in operation in 1816. The whole enterprise was abandoned about 1826, after frequent changes of ownership. The ore used at the furnace was picked out of gravel banks in the neighborhood in very small lumps. The fuel used was charcoal. There was another early charcoal furnace in this



Felix Reville Brunot

Civil engineer; manufacturer; philanthropist; president of the Board of Indian Commissioners appointed by President Grant, 1865. Reproduced especially for this work from portrait belonging to The Western University of Pennsylvania county, named Bassenheim, built by Detmar Bassé. This furnace was located on the Conoquenessing creek and about a mile west of the Butler county line. In February, 1818, $12 per ton were paid for hauling pig metal from this furnace to Pittsburg, 30 miles distant, over a bad road. The furnace was abandoned about 1824.

The admirable water power furnished by the Beaver river and the facilities for shipment afforded by the Ohio river and subsequently by the Beaver Canal presented special inducements to manufacturers of iron and steel products and to other manufacturers. In 1828 Robert Townsend & Co. built at Fallston, on the opposite side of Beaver river from New Brighton, in Beaver county, a mill for the manufacture of iron wire, which is still in operation. About 1852 the manufacture of rivets was added to the business and in 1887 the manufacture of wire nails was commenced. In the meantime the Harmony Society promoted the establishment of various iron and steel enterprises at Beaver Falls. As the result of its own enterprise and that of others the manufacture of cutlery, files, saws, axes, hoes, shovels, etc., which technically consume iron and steel, was soon established, and subsequently the manufacture of steel itself was added. The prominence of Beaver county in the manufacture of iron and steel during the last quarter of the nineteenth century and at the present time has been largely due to the development within its borders of an ample supply of natural gas. There are to-day many iron and steel enterprises of modern date at Beaver Falls and in other parts of Beaver county.

Prior to 1846 there were a few furnaces in the Shenango valley, all using charcoal, one of which was Springfield furnace, half a mile from Leesburg and seven miles southeast of Mercer, built in 1837 and active in 1849, while another was Temperance furnace, about six miles east of Greenville, built about 1840. Day, in 1843, says: "Two furnaces were wrought formerly, but have since been abandoned." In 1806 the geographer Joseph Scott says that "a forge and furnace are now nearly erected" at New

Castle. About 1810 there was a forge on Neshannock creek, "midway between Pearson's flour mill and Harvey's paper mill," for the manufacture of bar iron from the ore. The Shenango valley, embracing Lawrence and Mercer counties, is now one of the country's great iron and steel centres.

The first furnace in the once important but now nearly neglected ironmaking district composed of Armstrong, Butler, Clarion, Venango, and other northwestern counties was Bear Creek, in Armstrong county, which was built in 1818 and went into operation in that year. It was built to use coke, with steam power, and its first blast was with this fuel, but charcoal was soon substituted. The furnace was abandoned long before 1850, but was running in 1832, in which year Gordon says that it was owned by Henry Baldwin, Esq., and was reputed to be the largest furnace in the United States, having made forty tons of iron in a week. This furnace had a tramroad, with wooden rails, in 1818.

Slippery Rock furnace, in Butler county, and Clarion furnace, in Clarion county, were built in 1828, the latter by Christian Myers, of Lancaster county, who built another furnace about 1844, which he called Polk. Allegheny furnace, at Kittanning, in Armstrong county, and Venango furnace, on Oil creek, in Venango county, were built in 1830. From 1830 to 1850 this section of the State produced large quantities of charcoal pig iron. In 1850 there were 11 furnaces in Armstrong county, 6 in Butler, 28 in Clarion, and 18 in Venango: 63 in all. In 1858 there were 18 in Armstrong, 6 in Butler, 27 in Clarion, and 24 in Venango: 75 in all. All these were charcoal furnaces, except four coke furnaces at Brady's Bend. Many of these furnaces had, however, been abandoned at the latter date, and every one has since been abandoned. Most of them were built to supply the Pittsburg rolling mills with pig iron.

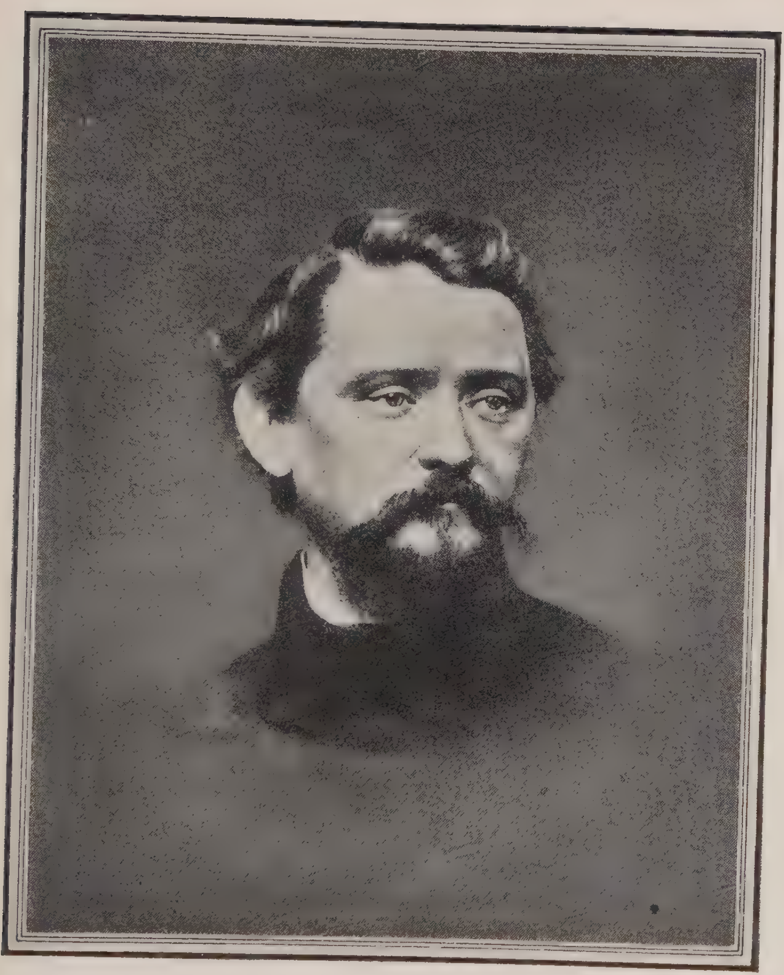
The Great Western iron works at Brady's Bend, Armstrong county, embracing a rolling mill and four furnaces to use coke, were built by Philander Raymond and others in 1840 and 1841. The furnaces were finally blown out in 1873 and the rolling mill was abandoned in the same year. It was built in 1841 to roll bar iron, but it afterwards rolled iron rails, which were at first flat bars, with holes for spikes countersunk in the upper surface. The mill continued to make rails until after the close of the civil war. There was a large amount of Boston capital invested at one time in these works.

Erie charcoal furnace, at Erie, was built in 1842 and abandoned in 1849. It used bog ore. Liberty furnace, on the north side of French creek, in Crawford county, was built in 1842 and abandoned in 1849.

The iron manufactured in the Allegheny valley was taken down the Allegheny river to Pittsburg on keel-boats and arks, sometimes on rafts, the business of transporting it by water being quite extensive down to about 1850. Cornplanter Indians, from Warren county, were among the raftsmen of those days.

We have left to the last the history of the early iron and steel enterprises of Allegheny county and a summary of the present extraordinary development of its iron and steel industries.

George Anshutz, the pioneer in the manufacture of iron at Pittsburg, was an Alsacian by birth, Alsace at the time being part of France. He was born on November 28, 1753, and died at Pittsburg on February 28, 1837, aged over 83 years. He acquired some knowledge of the iron business by having the management of a foundry in the vicinity of Strasburg. In 1789 he emigrated to the United States and soon afterwards located at a place now known as Shady Side and in the East End of Pittsburg, where he built a small furnace, probably completing it in 1792. In 1794 the furnace was abandoned. It had been expected that iron ore could be obtained in the vicinity, but this expectation was not realized. The neighborhood produced little else than red shale. Recourse was next had to a deposit of iron ore on Roaring run, an affluent of the Kiskiminetas, in the south-



Thomas Buchanan Read

Cigar maker; sign painter; artist; sculptor; poet; author of "Sheridan's Ride;" born, 1822; died, 1872

eastern corner of Armstrong county, from which supplies were received in arks at a point on the Allegheny river near to the furnace. Some ore was also brought by difficult wagon transportation from the vicinity of Fort Ligonier and Laughlinstown, in Westmoreland county. But the expense entailed in bringing ore from localities so difficult of access in those days was too great to justify the continued working of the furnace.

Anshutz's furnace was built at a point about four miles east of the site of Fort Pitt, on a stream known as Two-Mile run, on the bank of which Colonel Jonas Roup had previously at an early period, after emigrating from the Cumberland valley, erected a grist and saw mill. The enterprise seems to have been largely devoted to the casting of stoves and grates. When the road-bed of the Pennsylvania Railroad was graded at Shady Side, in 1851, a portion of the furnace building was demolished and a part of its foundation was removed. Subsequently, in digging the cellar of Alexander Pitcairn's house, a portion of the cinder bank was exposed.

Clinton furnace, on the south side of the Monongahela, in Pittsburg, built in 1859 by Graff, Bennett & Co., and blown in on the last Monday of October in that year, was the first furnace built in Allegheny county after the abandonment in 1794 of George Anshutz's furnace at Shady Side. This furnace was built to use coke made from coal from the Pittsburg vein, but its use was not satisfactory and coke from the Connellsville region was soon substituted. Clinton furnace was followed in 1861 by the two Eliza furnaces of Laughlin & Co. and soon afterwards by others, all to use Connellsville coke.

The first iron foundry at Pittsburg was established in 1805 by Joseph McClurg on the northeast corner of Smithfield street and Fifth avenue. Rev. A. A. Lambing says that Joseph Smith and John Gormly were associated with Mr. McClurg in this enterprise. They retired, however, before 1807. The enterprise was styled the Pittsburg foundry. On February 12, 1806, Joseph

McClurg advertised in the "Commonwealth" that "the Pittsburgh Foundry is now complete." In 1812 it was converted by Mr. McClurg into a cannon foundry and supplied the Government with cannon, howitzers, shells, and balls. Commodore Perry's fleet on Lake Erie and General Jackson's army at New Orleans received their supplies of these articles in part from this foundry. In 1813 there were two iron foundries in this city, McClurg's and Anthony Beelen's, and one steel furnace, owned by Tuper & McCowan. In the following year there were two additional foundries. Mr. Beelen's foundry was put in operation in November, 1810. Anthony Beelen, as well as George Anshutz, was a native of France.

Arms, 1870

According to Cramer's "Pittsburgh Almanac" there were three nail factories in Pittsburg in 1807, Porter's, Sturgeon's, and Stewart's, "which make about forty tons of nails yearly." In 1810 about 200 tons of cut and wrought nails were made at Pittsburg. The condition of the iron industry at Pittsburg in 1810 is thus summed up by a writer in "The Navigator" for 1811: "The manufacture of ironmongery has increased in this place beyond all calculation. Cut and wrought nails of all sizes are made in vast quantities, about, we think, 200 tons per year. Fire shovels, tongs, drawing knives, hatchets, two-feet squares, augers, chissels, adzes, axes, claw hammers, door hinges, chains, hackles, locks, door handles, spinning-wheel irons, plough irons, flat-irons, &c.; tons of these, together with a number of other articles in the iron way, are exported annually. Abner Updegraff attempted the making of *files,* which he finds he can do to advantage. He also makes gimlets, and by way of experiment made a neat penknife, which, he says, could be made here as cheap as those imported." The making of screws for butt hinges is also noted.

The honor of having erected the first rolling mill at Pittsburg is undoubtedly due to Christopher Cowan, who built a mill at the corner of Penn street and Cecil's alley in 1812, completing it in 1813. This mill had no puddling furnaces, nor was it built to roll bar iron. It was intended to and certainly did manufacture sheet iron, nail and spike rods, shovels, spades, etc. Cramer's "Pittsburgh Almanack" for 1813 says of this enterprise: "C. Cowan is erecting a most powerful steam engine to reduce iron to various purposes. It is calculated for a *seventy horse power,* which [will] put into complete operation *a Rolling-mill, a Slitting-mill and a Tilt-hammer,* all under the same roof. With these Mr. Cowan will be enabled to furnish sheet iron, nail and spike rods, shovels and tongs, spades, scythes, sickles, hoes, axes, frying-pans, cutting knives. In addition to Mr. Cowan's already extensive nail business he makes a great supply of chains, plough irons, shingling hatchets, clew hammers, chissels, screw augers, spinning wheel irons and smiths' vices of superior quality."

The Union rolling mill was the second mill built at Pittsburg. It was located on the Monongahela river, was built in 1819, and was accidentally blown up and permanently dismantled in 1829, the machinery being taken to Covington, Kentucky. This mill had four puddling furnaces—the first in Pittsburg. It was also the first to roll bar iron. It was built by Baldwin, Robinson, McNickle & Beltzhoover. It is claimed that the first angle iron rolled in the United States was rolled at this mill by Samuel Leonard, who also rolled "L" iron for salt pans.

Other rolling mills at Pittsburg and its vicinity soon followed the Union rolling mill. On Pine creek, on the site of the present works of Spang, Chalfant & Co., at Etna, Belknap, Bean & Butler manufactured scythes and sickles as early as 1820, but in 1824 steam power was introduced and blooms were rolled. A rolling mill on Grant's Hill was built in 1821 by William B. Hays and David Adams, near where the court-house now stands. Water for the generation of steam at this mill had to be hauled from the Monongahela river. The Juniata iron works were built on the Allegheny river in 1824 by Dr. Peter Shoenberger. Sligo rolling mill was built on the south side of the Monongahela by Robert T. Stewart and John Lyon in 1825. The Dowlais works, in Kensington, were built in 1825 by George Lewis and Reuben Leonard.

The condition of the iron industry at Pittsburg at the close of the first quarter of the nineteenth century is summed up in Cramer's "Magazine Almanac" for 1826: "The manufactures of Pittsburgh, particularly in the article of iron, begin to assume a very interesting aspect. Not less than five rolling mills are now in operation, and a sixth will soon be ready, for the various manufactures of iron. Four of the mills are capable of making iron from the pig, besides rolling, slitting, and cutting into nails."

In 1829 Allegheny county had eight rolling mills, using 6,000 tons of blooms, largely from the Juniata valley, and 1,500 tons of pig iron. In the same year there were nine foundries that consumed 3,500 tons of iron. In 1828 the iron rolled was 3,291 tons; in 1829 it was 6,217 tons; and in 1830 it was 9,282 tons. It is stated that in 1830 one hundred steam-engines were built. In 1831 there were two steel furnaces at Pittsburg and cast iron began to be used for pillars, the caps and sills of windows, etc. In 1836 there were nine rolling mills in operation, and eighteen foundries, engine factories, and machine shops. In 1856 there were at Pittsburg and in Allegheny county twenty-five rolling mills and thirty-three foundries, but not one blast furnace. In 1890 there were twenty-five blast furnaces and sixty rolling mills and steel works in Allegheny county. In 1901 there were thirty-seven large blast furnaces and sixty-three rolling mills and steel works in this county.

The Pittsburg rolling mills were largely supplied from the first with blooms from the Juniata valley and with pig iron from nearer localities, but large quantities of blooms were also brought to Pittsburg from Ohio, Kentucky, and Tennessee.

The preëminence of Pennsylvania as an iron and steel producer is very largely due to the extraordinary activity of the iron and steel industries of Allegheny county since about 1825. After this year the towns and cities in the Ohio valley were mainly supplied by Pittsburg manufacturers with bar iron, nails, and all the iron and steel wares of the day. The following table gives the number of blast furnaces, rolling mills, and steel works and the production of pig iron and crude steel and of iron and steel rails and structural shapes in Allegheny county in 1898 and 1901:

Details.	1898.	1901.
Furnaces built and building....................No.	31	37
Production of pig iron.................Gross tons.	3,022,901	3,690,011
Rolling mills and steel works..................No.	60	63
Production of Bessemer steel...........Gross tons.	2,338,087	2,883,595
Production of open hearth steel........Gross tons.	1,042,350	2,199,191
Production of crucible and other steel..Gross tons.	52,352	56,053
Total production of steel..............Gross tons.	3,432,789	5,138,839
Production of all kinds of rails.........Gross tons.	564,085	711,031
Production of structural shapes.........Gross tons.	451,323	617,308

Allegheny county produced in 1901 over 23 per cent. of the total production of pig iron in the United States; over 33 per cent. of the total production of Bessemer steel ingots and castings; over 47 per cent. of the total production of open-hearth steel ingots and castings; almost 57 per cent. of the total production of crucible steel; over 38 per cent. of the total production of all kinds of steel; over 24 per cent. of the total production of all kinds of rails; over 60 per cent. of the total production of structural shapes; and over 32 per cent. of all rolled iron and steel products.

The details which have been given in preceding pages of the early iron history of Pennsylvania relate almost entirely to the manufacture of iron with charcoal as fuel, no other fuel having been used in American blast furnaces until about 1840, and but little use of any other fuel having been made before that time in any other branches of the American iron industry. The period of the iron history of Pennsylvania and of every other part of the United States prior to 1840 may therefore very properly be styled the charcoal era.

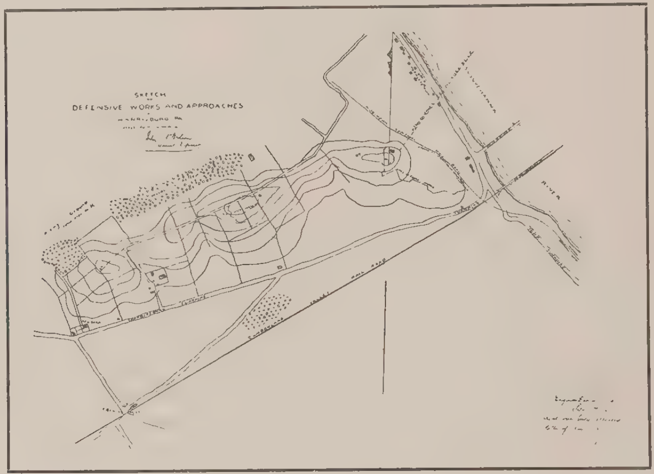
Entrance to Fort Washington, Cumberland County, opposite Harrisburg

From photograph in possession of Historical Society of Dauphin County, Pennsylvania. Negative by LaRue Lemer

After many unsuccessful experiments with anthracite coal in the blast furnace, and a few moderately successful experiments, the use of this fuel in the manufacture of pig iron was made entirely successful in 1840 by David Thomas, who, on the 3d day of July of that year, blew in the first of the furnaces of the Lehigh Crane Iron Company, at Catasauqua, Lehigh county, Pennsylvania, with the new fuel. From the start this furnace produced 50 tons a week of good foundry iron, water power from the Lehigh river being used. Other furnaces to use anthracite coal soon followed, and in a few years the manufacture of anthracite pig iron became an important branch of the iron industry of Pennsylvania and of adjoining States. In 1855 the country made more pig iron with anthracite coal than with charcoal. About 1840 the use of anthracite coal in rolling mills in Eastern Pennsylvania and in some other States became general. It had previously been used in the generation of steam. David Thomas is justly styled the Father of the American anthracite iron industry. To-day comparatively little anthracite coal is used in the blast furnace in this country, and the most of what is used is mixed with coke. In 1901 the whole quantity of pig iron made with anthracite coal alone amounted to only 43,719 tons.

Successful experiments in the use of coke in the blast furnace in this country date from 1835, when William Firmstone succeeded in making good forge pig iron for about one month at the end of a blast at Mary Ann furnace, in Huntingdon county, Pennsylvania, with coke made from Broad Top coal. This pig iron was taken to a forge three miles distant and made into blooms. Coke had previously been used in a small way in forges in Pennsylvania and as a mixture with charcoal in a few blast furnaces. About 1837 F. H. Oliphant made at Fairchance furnace, near Uniontown, in Fayette county, Pennsylvania, a quantity of coke pig iron exceeding twenty tons, and probably exceeding 100 tons. He did not, however, long continue the use of coke, and resumed the manufacture of iron with charcoal.

The first continuous use of coke in the blast furnace in this country was achieved at Lonaconing furnace, at Lonaconing, in Western Maryland, in 1838 or 1839. In June, 1839, this furnace, which was built by the George's Creek Company, was making about 70 tons per week of good foundry iron. Other furnaces soon afterwards used coke, particularly in Western Pennsylvania, but its use as a furnace fuel did not come rapidly into favor, and many experiments with it were attended with loss. Anthracite coal was the favorite blast-furnace fuel next to charcoal. It was not until after 1850 that the use of coke began to exert an appreciable influence upon the manufacture of pig iron. In 1849 there was not one coke furnace in blast in Pennsylvania. In 1856 there were twenty-one furnaces in Pennsylvania and three in Maryland which were using coke or were adapted to its use, and their total production in that year was 44,481 gross tons of pig iron. After 1856 the use of this fuel in the blast furnace increased in Pennsylvania and was extended to other States, but it was not until 1869 that the country made more pig iron with coke than with charcoal, and not until 1875 that it made more than with anthracite. In 1901 fully fifteen-sixteenths of the country's total production of pig iron was made with coke, either by itself or in combination with anthracite coal, raw bituminous coal, or charcoal. Pennsylvania produces more coke than all the other States. Its Connellsville coke has a world-wide reputation.



Map of Forts Washington and Henry Clay, Cumberland County

From original in the War Department at Washington, a photo of which is in possession of the Historical Society of Dauphin County, Pennsylvania

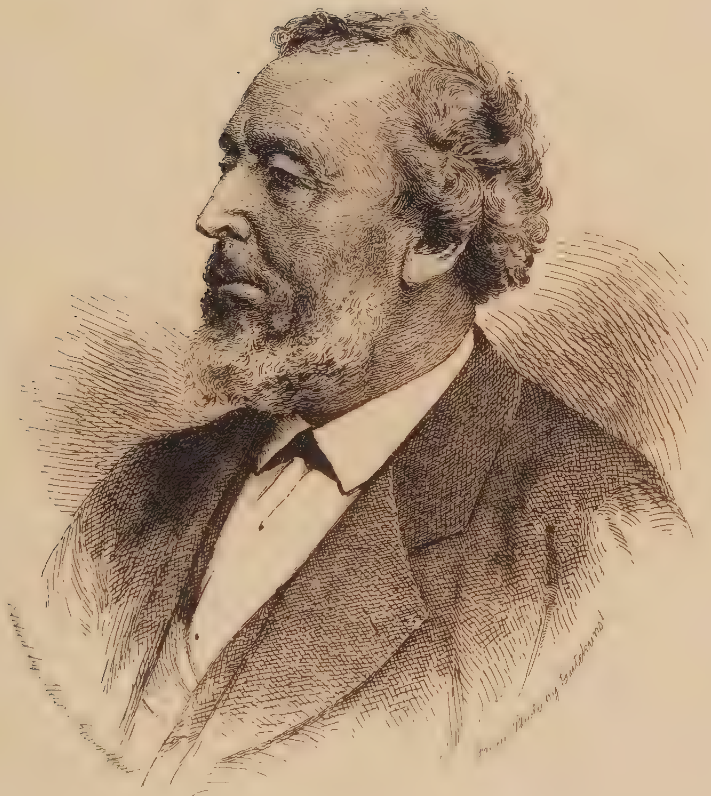
The use of raw bituminous coal, or uncoked coal, in the blast furnace, which has never been an important factor in the manufacture of pig iron in this country, and which is now virtually abandoned, has been chiefly confined to the Shenango and Mahoning valleys in Pennsylvania and Ohio, respectively, in which a particularly hard bituminous coal, known as splint coal, or block coal, is found, and which is not a good coking coal. The use of this coal in its raw state in the blast furnace dates from 1845, when Clay furnace, in Mercer county, Pennsylvania, was successfully operated with it for some time. In the same year Mahoning furnace, in Mahoning county, Ohio, was built expressly to use this fuel. Other furnaces in the two valleys mentioned were soon built to use this fuel and some charcoal furnaces were altered to use it. In 1856 six furnaces in Pennsylvania and thirteen in Ohio were using it, their total production in that year being 25,073 gross tons. Some progress was afterwards made in the use of the same quality of coal in the Hocking valley in Ohio, and also in Clay county and neighboring counties in Indiana, but since 1880 its use has gradually declined, until to-day very little pig iron is made with this fuel, and when used it is mixed with coke.

The charcoal iron industry of Pennsylvania is now virtually dead. Most of its charcoal furnaces and forges and all of its primitive charcoal bloomaries have been abandoned. In 1901 only four charcoal furnaces were left in the whole State and not one of these was in Western Pennsylvania. Their total production of pig iron in that year was only 4,761 tons.

The manufacture of steel by the old-time method of cementation had an existence in Pennsylvania, as in some other States, before the Revolution, but it never attained a position of much prominence, while the manufacture of crucible steel, although often experimented with, and sometimes very successfully, made but slow progress down to about 1860. Up to this time the country's main reliance for steel was upon English manufacturers, who were favored in our markets by low duties. The manufacture in this country of crucible steel of the best grades may be said to have been established on a firm basis after Hussey, Wells & Co.

and Park, Brother & Co., of Pittsburg, and Gregory & Co., of Jersey City, New Jersey, in the years 1860, 1862, and 1863, respectively, succeeded in making it of uniform quality as a regular product. The event was one of great importance, as it marked the establishment in this country of a new industry. Dr. Curtis G. Hussey of Pittsburg is entitled to the honor of having established this industry in our country, the firm of which he was the head having successfully made crucible steel of the best quality as a regular product in 1860 for the first time in our history. Of the country's total production of crucible steel in 1901 Pennsylvania made about three-fourths, and nearly all of this large proportion was made in Allegheny county.

The manufacture of Bessemer steel, the invention of Sir Henry Bessemer, to which we owe the cheap rails for our railroads, was commenced in this country in 1864 and 1865, in an experimental way, at Wyandotte, Michigan, and Troy, New York, but it was not until several years afterwards that Bessemer steel was produced in commercial quantities. In 1867 we produced 2,679 tons of Bessemer steel ingots and 2,277 tons of Bessemer steel rails. In June, 1867, the Pennsylvania Steel Company, at its works at Steelton, near Harrisburg, made the first Bessemer steel that was made in Pennsylvania. From this time on the industry steadily grew, although slowly at first, until in 1901 we produced 8,713,302 tons of Bessemer ingots and castings and 2,870,816 tons of Bessemer rails. From the first Pennsylvania has been by far the most active of all the States in the development of the Bessemer steel industry. Of the country's total production of Bessemer steel ingots and castings in 1901 Pennsylvania made exactly 49.2 per cent., and of the total production of Bessemer steel rails in the same year Pennsylvania's share was 48.9 per cent. The first steel rails ever rolled in the United States upon order, in the way of regular business, were rolled by the Cambria Iron Company, at Johnstown, Pennsylvania, in August, 1867, from ingots made by the Pennsylvania Steel Company.



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The manufacture of steel by the Siemens-Martin, or open-hearth, process was introduced into this country in 1868 by Cooper, Hewitt & Co., at the works of the New Jersey Steel and Iron Company, at Trenton, New Jersey. For many years this method of making steel made slow progress in the United States. In August, 1875, there were thirteen establishments in this country which were then making open-hearth steel or were prepared to make it, and of these five were located in Pennsylvania, of which three were in Pittsburg. The total production of open-hearth steel in 1875 was, however, only 8,080 tons, and ten years afterwards it was only 133,376 tons, but in 1895 it was 1,137,182 tons, and in 1901 it was 4,656,309 tons. Of the total production in 1901 Pennsylvania's share was 3,594,763 tons, or 77.2 per cent.

The iron age having been succeeded many years ago by the steel age, which may be said to have been ushered in by the Bessemer steel-making process, that gave us the steel rail, it became necessary for Pennsylvania to seek for ores of purer quality than those which, as a rule, are found inside its own boundaries. These better ores it has found mainly in the Lake Superior region, and they have for many years formed the basis of its vast iron and steel industries. Other ores adapted to the manufacture of steel have been imported from Europe, Africa, and Cuba. The first use of Lake Superior iron ore in any blast furnace in this country occurred in 1853, at Sharpsville furnace, in Mercer county, Pennsylvania, then owned by David and John P. Agnew, and in the same year it was used at Clay furnace, in the same county, at both furnaces successfully. After 1856 other furnaces in Pennsylvania and in other States began the regular use of Lake Superior ore. Cuban iron ore was first used in 1884 at furnaces in Eastern Pennsylvania owned by the Bethlehem Iron Company and the Pennsylvania Steel Company.

At the Siberian rolling mill of Rogers & Burchfield, at Leechburg, in Armstrong county, natural gas, taken from a well 1;200

feet deep, was first used as a fuel in the puddling furnace. In the fall of 1874 it was announced that during the preceding six months this gas had furnished all the fuel required for puddling, heating, and making steam at these works, not one bushel of coal having been used. Soon afterwards the firm of Spang, Chalfant & Co., owners of the Etna Iron Works, at Etna, Allegheny county, introduced the use of natural gas in all their departments. They were the first manufacturers in the United States to use the new fuel exclusively. In 1901 there were 45 iron and steel works in Allegheny county which used natural gas and 28 works in other parts of Western Pennsylvania which used this fuel. In other parts of the country there were 44 works using natural gas in this year.

In the census year 1810 there were in Pennsylvania 44 blast furnaces, 78 forges, 4 bloomaries, 18 rolling and slitting mills, 6 air furnaces, 50 trip-hammers, 5 steel furnaces, and 175 naileries. The furnaces produced 26,878 gross tons of "cast iron," the product of the whole country, with 153 blast and air furnaces, being 53,908 tons. Of the 5 steel furnaces in Pennsylvania one was in Philadelphia city and one each was in Philadelphia, Lancaster, Dauphin, and Fayette counties, and their product was 531 tons of steel valued at $81,147, the whole country making 917 tons.

In the census year 1820 the value of all manufactures of pig iron and castings in the United States was $2,230,275, of which Pennsylvania produced $563,810 worth. In the same year the country produced "manufactures of wrought iron" valued at $4,640,669, of which Pennsylvania's share was $1,156,266. Quantities were not ascertained.

In the census year 1830 the value of pig iron and castings manufactured in the United States was $4,757,403, of which the share of Pennsylvania was $1,643,702. In the same year the country's production of "manufactures of wrought iron" was valued at $16,737,251, of which Pennsylvania's share was $3,762,847. Quantities were not ascertained.

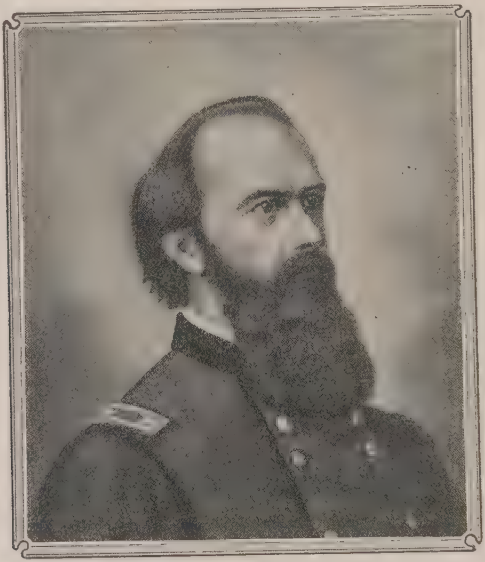
In the census year 1840 there were in the United States 804 furnaces, which produced in that year 286,903 tons of "cast iron." Pennsylvania had 213 furnaces and made 98,395 tons of "cast iron." In the same year there were 795 bloomaries, forges, and rolling mills in the country, of which Pennsylvania had 169. The number of tons of bar iron produced in that year was 197,233, of which Pennsylvania's share was 87,244.

In 1842 there were 151,885 tons of pig iron produced in Pennsylvania. Its production of pig iron in 1843 was 190,000 tons, and in 1844 it was 246,000 tons. In 1846 there were 317 blast furnaces, producing 368,056 tons of pig iron, and in 1847 there were the same number, producing 389,350 tons of pig iron. The production of the furnaces in 1849 was 253,035 tons; of the bloomaries, 335 tons; of the forges, 28,495 tons; and of the rolling mills, 108,358 tons.

In the census year 1850 there were produced in the United States 563,755 tons of pig iron, of which Pennsylvania produced 285,702 tons. In the same year the country produced "wrought-iron manufactures" to the amount of $22,629,271, of which Pennsylvania's share was $9,224,256.

In the census year 1860 the United States produced 51,290 tons of blooms, worth $2,623,178, of which Pennsylvania made 24,700 tons, worth $1,467,450. In the same year the United States produced 987,559 tons of pig iron, worth $20,870,120, of which Pennsylvania produced 580,049 tons, worth $11,262,974. In the same year the United States produced 513,213 tons of rolled iron, worth $31,888,705, of which Pennsylvania produced 266,253 tons, worth $15,122,842. In the same year the United States produced 11,838 tons of steel, worth $1,778,240, of which Pennsylvania produced 9,890 tons, worth $1,338,200.

In the census year 1870 the United States produced 110,808 tons of blooms, worth $7,647,054, of which Pennsylvania made 68,238 tons, worth $4,881,431. In the same year the United States produced 2,052,821 tons of pig iron, worth $69,640,498, of which Pennsylvania produced 1,033,272 tons, worth $32,636,410. In the same year the United States produced 1,468,312 tons of rolled iron, worth $120,311,158, of which Pennsylvania made 713,331 tons, worth $56,811,975. In two establishments the United States in the same year produced 19,403 tons of Bessemer steel, worth $1,818,220, of which Pennsylvania, in one establishment, produced 13,500 tons, worth $1,405,000. In the same year, not including Bessemer steel, the United States produced 30,354 tons of steel, worth $7,791,766, of which Pennsylvania produced 21,806 tons, worth $5,560,238.



John White Geary

Superintendent Allegheny Portage railroad; soldier in Mexican war; first postmaster and first mayor of San Francisco, California; territorial governor of Kansas, 1856; brigadier general United States volunteers, 1862; brevet major-general, 1865; governor of Pennsylvania, 1867-1873

In the calendar year 1880 Pennsylvania made 48.5 per cent. of the country's total production of pig iron in that year; 46.8 per cent. of all the rolled iron produced; and 46 per cent. of the total production of iron and steel rails.

Since about the middle of the eighteenth century Pennsylvania has been noted as the leading iron and steel making State in the Union. For many years it has produced one-half of all the pig-iron, one-half of all the rolled iron, and more than one-half of all the steel made in the United States. In 1890 it made 48 per cent. of the large production of pig iron in that year; 61 per cent. of the Bessemer steel ingots produced; 70 per cent. of the Bessemer steel rails; 81 per cent. of the open-hearth steel; 75 per cent. of the crucible steel; 52 per cent. of the rolled iron; and 54 per cent. of the rolled steel other than steel rails.

In 1901 Pennsylvania made 46.2 per cent. of the country's total production of pig iron in that year; 49.2 per cent. of the Bessemer steel; 77.2 per cent. of the open-hearth steel; 71.9 per cent. of the crucible steel; 48.9 per cent. of the Bessmer steel rails; 91.4 per cent. of the structural shapes; 69.7 per cent. of the plates and sheets; 28.3 per cent. of the wire rods; and 56.4 per cent. of all rolled iron and steel products.

The following table, compiled by the American Iron and Steel Association, gives the production of iron ore, pig iron, steel, etc., in Pennsylvania in 1901, compared with the production of the whole country. The preëminence of Pennsylvania as an iron and steel producer is really marvelous. The small percentage of iron ore it produces is also remarkable. It is accounted for by the superior quality of the ores of Lake Superior, which are now chiefly used in all the Northern States, and to a less extent in a few other localities, in the production of pig iron for steel-making purposes, as well as for the manufacture of general rolling mill and foundry products. Large quantities of steel-making ore are also imported into Pennsylvania from Cuba and other countries.

Production of iron ore, pig iron, steel, etc., in the United States and Pennsylvania in the calendar year 1901.	United States. Gross tons.	Pennsylvania. Gross tons.	Percentage of Pennsylvania.
Total production of iron ore	28,887,479	1,040,684	3.6
Total production of pig iron	15,878,354	7,343,257	46.2
Production of Bessemer steel ingots and castings	8,713,302	4,293,439	49.2
Production of open hearth steel ingots and castings	4,656,309	3,594,763	77.2
Production of crucible and other steel ingots and castings	103,984	74,800	71.9
Total production of steel ingots and castings,	13,473,595	7,963,002	59.1
Production of Bessemer steel rails	2,870,816	1,406,008	48.9
Production of structural shapes	1,013,150	925,940	91.4
Production of plates and sheets	2,254,425	1,572,500	69.7
Production of wire rods	1,365,934	386,037	28.3
Production of all other rolled products, including bars, skelp, cut nails, open-hearth steel rails, iron rails, etc.	4,845,002	2,672,183	55.2
Total of all rolled products	12,349,327	6,962,668	56.4
Production of wire nails....kegs of 100 lbs.	9,803,822	3,118,508	31.8
Production of cut nails.....kegs of 100 lbs.	1,542,240	833,469	54.0

ANTHRACITE COAL

Geologists agree in a general way as to the composition of coal. They say that it is for the most part the remains of vegetable matter which has become decomposed and mineralized. Anthracite varies in color from glistening black to lead gray, is hard and clean, ignites with difficulty, burns almost without smoke and produces intense heat.

The production of anthracite coal in Pennsylvania gives direct employment to nearly 150,000 persons; and, incidentally, it may be mentioned that females are not allowed to work in the collieries. (In England, Scotland and France, within the last few years, women and children have been employed in carrying coal from the interior of the mines to the surface.)

It is estimated that the anthracite fields of Pennsylvania now contain about 14,453,397,600 cubic yards of coal; each cubic yard weighs 2,240 pounds, hence the weight of the entire coal deposit may be fairly estimated at 32,375,710,624,000 pounds. Mining engineers assert, on the basis of these computations, that the supply of anthracite yet to be mined will last from eighty to one hundred years.

The geological survey of the State, 1885, separates the anthracite region[1] into the following divisions:

1. *The Southern or Pottsville Field* extends from Lehigh river at Mauch Chunk southwest to within a few miles of the Susquehanna river, and thence nearly north to Harrisburg, comprising the territory of Carbon, Schuylkill and Dauphin counties. The eastern end of this field, known as the Lower Lehigh or Panther creek basin, between Tamaqua, on the Little Schuylkill, and Mauch Chunk, has generally been included by the coal trade in the Lehigh field, from the fact that its coal more closely resembles that obtained in the Upper Lehigh region than that in the Pottsville field west of Tamaqua, and also from the fact that shipments from it to market have been made largely through the Lehigh valley.

2. *The Western Middle or Mahanoy and Shamokin Field* lies between the easternmost headwaters of Little Schuylkill river and the Susquehanna, and within Schuylkill, Columbia and Northumberland counties. These two coal fields (1 and 2) are frequently designated in a general way as the Schuylkill region, although parts of them are better known by the trade names defining the districts from which coals of special characteristics are mined.

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[1] In the American Cyclopedia (1873), S. H. Daddow gives the total area of the anthracite fields in Pennsylvania as 472 square miles, and divides the region as follows: Wyoming field, 198 square miles; Schuylkill field, 146 square miles; Lehigh field, 37 square miles; Middle Field, 91 square miles. The statement regarding the extent of the anthracite fields was based upon previous geological surveys and was presumably correct at the time, but in fact the area of the fields as shown by more recent investigations is four times greater than they were understood to be in 1873.

3. *The Eastern Middle or Upper Lehigh Field* lies between Lehigh river and Catawissa creek, and principally in Luzerne county, with limited areas extending into Carbon, Schuylkill and Columbia counties.

4. *The Northern or Wyoming and Lackawanna Field,* in the two valleys from which it derives its name, is embraced almost entirely by Luzerne and Lackawanna counties. A small area in the extreme eastern end extends into Wayne and Susquehanna counties.

Slocum Hollow, 1840

The site of the present city of Scranton. From an old print

5. *The Loyalsock and Mehoopany Field,* within the areas drained by the headwaters of the Loyalsock and Mehoopany creeks, is included in Sullivan and Wyoming counties. This field is from twenty to twenty-five miles northwest of the western end of the northern field. Its geological structure closely resembles that of the bituminous field, in which it has until recently been included, although the composition of much of its coal entitles it to rank with that of the anthracite region generally.

The geographical divisions of the anthracite coal fields above mentioned are also, for trade purposes, sometimes grouped as follows: The Wyoming, embracing the whole of the northern and Loyalsock fields; the Lehigh, embracing all of the eastern and part of the southern field; the Schuylkill, embracing the western and part of the southern field. The Wyoming is by far the most important of these regions, fully 50 per cent. of the total output of anthracite coming from it. The Schuylkill provides 35 per cent. of the output and the Lehigh region 15 per cent. The following table shows the relative importance of the different counties of the anthracite region to the coal trade by giving the number of tons and percentages of coal produced in each county for the years 1883 and 1884:

County.	1883		1884	
	Production in tons.	Percentages.	Production in tons.	Per cent.
Susquehanna	30,945	0.09	77,058	00.24
Lackawanna	7,022,241	20.68	7,093,190	21.73
Luzerne	14,176,487	41.75	13,382,912	41.00
Sullivan	84,376	00.25	86,018	00.26
Carbon	1,007,419	2.97	1,155,916	3.54
Schuylkill	7,758,811	22.85	7,165,532	21.96
Columbia	774,755	2.28	745,826	2.28
Northumberland	2,497,801	7.36	2,331,108	7.14
Dauphin	602,996	1.77	603,939	1.85

At the time indicated in the preceding table the area of anthracite deposits was supposed to be something less than one thousand square miles, but more recent investigations have shown that this coal abounds throughout a territory of about seventeen hundred square miles. The table shows nine counties in which anthracite was produced in 1884, whereas, at the present time, Wayne is to be added to the list as a considerable factor in the production, there having been mined within its borders in 1901 the aggregate of 329,877 tons of coal.

In its supervision of the mining properties of the State, the legislature, by an act passed June 8, 1901, directed the chief of the bureau of mines to rearrange the anthracite inspection districts on the basis of the number of mines engaged in coal production, number of employes and the number of accidents, as shown by the report of the bureau for the year 1900. Under the act the districts were comprised as follows:

First District—Luzerne and Sullivan counties. *Second District*—Lackawanna, Wayne and Sullivan counties. *Third District*—Carbon county. *Fourth District*—Schuylkill county. *Fifth District*—Northumberland county. *Sixth District*—Columbia and Dauphin counties.

The following table, prepared by the secretary of internal affairs, shows the number of tons of anthracite produced in each of these counties during the last ten years. Taken in connection with what is said elsewhere in this chapter, the table furnishes an interesting study relating to the importance of coal production in our Commonwealth.

Production of anthracite coal in tons by counties from 1892 to 1901, inclusive:

Counties	1892	1893	1894	1895
Carbon	1,427,542.55	1,510,289.50	1,589,395	1,577,146
Columbia	889,489.85	741,990.74	510,537	493,042
Dauphin	639,879.00	640,723.17	699,607	712,856
Lackawanna	11,410,553.95	11,667,550.25	11,170,382	11,859,382
Luzerne	17,548,598.00	18,253,144.75	17,243,928	19,143,101
Northumberland	3,724,233.70	3,731,404.63	3,893,660	4,573,144
Schuylkill	9,564,534.60	9,992,208.97	9,985,092	11,495,388
Sullivan	76,209.65	70,418.00		152,141
Susquehanna	475,622.30	571,956.19	413,578	840,904
Wayne	....	....	....	....
Total	45,858,371.00	47,179,563.20	45,506,179	50,846,104

Counties	1896	1897	1898	1899	1900	1901
Carbon	1,488,550	1,327,235	1,043,663	1,630,595	1,673,961	1,659,392
Columbia	443,330	481,453	569,175	895,061	875,643	1,080,231
Dauphin	702,335	662,842	667,460	729,757	695,656	741,582
Lackawanna	11,638,479	11,946,871	11,588.801	13,248,949	12,282,108	15,409,040
Luzerne	17,964,900	17,141,809	18,195,398	19,899,742	19,179,573	21,396,312
Northumberland	4,117,569	3,774,667	3,519,305	4,339,547	4,188,343	4,849,009
Schuylkill	11,092,772	10,971,943	11,980,700	12,226,938	11,606,160	13,640,766
Sullivan	151,758	164,046	147,533	163,555	209,922	136,165
Susquehanna	474,637	476,488	423,139	624,125	496,432	663,487
Wayne				275,955	19,520	329,877
Total	48,074,330	46,947,354	47,145,174	54,034,224	51,217,318	59,905,951

As before stated, it is estimated that the anthracite coal supply will last from eighty to one hundred years. Mr. Joseph Harris, in an article in Vol. XIII of "The Forum," says that there are 5,329,451,404 tons yet to be mined. Mr. A. D. Smith computes the amount yet to be mined at 6,512,167,703 tons, and Mr. William Griffiths, the mining engineer, says in the "Bond Record" in 1896 that there are 5,073,786,000 tons yet available. While it may be true that the life of anthracite coal in this country will not extend beyond the period above mentioned, there is consolation in the fact that we have practically an inexhaustible supply of bituminous coal. The late Professor Tyndall, of England, in a letter to Mr. Jervis, wrote as follows:

"I see no prospect of any substitute being found for coal as a source of motive power. We have, it is true, our winds and streams and tides, and we have the beams of the sun. But these are common to all the world. We cannot take lead against a nation which, in addition to those sources of power, possesses the power of coal. We may enjoy a multiple of their physical and intellectual energy, and still be unable to hold our own against a people which possesses abundance of coal, and we should have, in my opinion, no chance whatever in a race with a nation which, in addition to abundant coal, has energy and intelligence approximately equal to our own."

Professor Tyndall had America in mind, no doubt, when he wrote the above letter, and the inferences drawn from it are so obvious that it is not necessary to mention them here.

"America, with her immense coal fields, is destined to become eventually the great coal-producer of the world," is the prediction made a few years ago by Mr. Simonin, an eminent French engineer.

Mr. William Jasper Nicholls, in his work, "The Story of American Coals," gives the following table showing the world's progress in the production of coal during the past fifty years:

	1845	1895
Great Britain	34,754,750	184,044,890
United States	3,763,013	182,352,774
Germany	6,500,000	103,851,090
France	4,141,617	28,862,017
Austria	700,000	28,037,678
Belgium	4,447,240	21,590,448
Russia	600,000	7,621,969
Canada	100,000	3,719,170
Japan	100,000	3,400,000
Spain	50,000	1,688,820
New Zealand	1,000	673,315
Sweden	60,000	421,155
Italy	10,000	326,340
Total	55,227,620	566,589,666

Anthracite coal was discovered[1] in the Wyoming valley in 1766, and soon afterward James Tilghman of Philadelphia sent samples of the article to Thomas and William Penn, in London, with the remark: "This bed of coal, situated, as it is, on the side of the river, may some day or other be of great value." In acknowledging receipt of the package, Thomas Penn said: "We shall have it examined by some persons skillful in that article and send their observation on it."

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[1] Anthracite was discovered in Rhode Island and also in Massachusetts about 1760. Since that time similar discoveries have been made in Virginia, Arkansas, Oregon and New Mexico, while Kansas has laid claims to small deposits in several localities. In 1840 Virginia produced 200 tons of anthracite, but during the next twenty years the total output from that State was only about 20,000 tons. In 1860 anthracite was mined for markets only in Rhode Island and Pennsylvania, the former

In 1768 two brothers named Gore, who were early settlers in the Wyoming valley, are said to have been the first persons to use coal in these regions. They were blacksmiths, and used it in their forges. An account published in 1770 tends to show that coal deposits were known to extend into the northern portions of Mahanoy and Shamokin, but no mining of consequence was done in those localities until 1834. Philip Ginter, a hunter, is said to have discovered coal near the site of Mauch Chunk in 1791.

Coal was discovered at Plymouth in 1805, by John and Abijah Smith, brothers, who had come from Connecticut a short time before. In 1807 they shipped the first boat load of coal to Columbia, but as anthracite was not understood at that time as being suitable for fuel in an open grate, they accompanied the load and also took with them a stone-mason and the tools necessary to set up plates in the houses to show its qualities for heating purposes. In Columbia several houses were supplied with grates in which stone coal, as anthracite was then called, was used for fuel, and only after a struggle of several years were the Smiths able to derive any profit whatever from their enterprise.

In 1808 Judge Jesse Fell of Wilkesbarre became possessed of the idea that stone coal could be made to burn in an open grate, and to that end he reasoned that if it would burn sufficiently well to destroy a wooden grate he would feel justified in constructing one of iron. His experiment proved successful, and, encouraged by his effort, he made an iron grate, shaped it after the fashion

State producing a very small proportion of the total output, and that inferior in quality in comparison with the coal production of our own State. For more detailed statement of the early history of coal productions in general the reader is referred to the various works on that subject written by Mr. James M. Swank, by Mr. William Jasper Nicholls, and also to the writings of their contemporaries.

of grates now in use, and did succeed in kindling a good fire. His achievement at that time was regarded as bordering on the marvelous, and the good judge himself, elated with the success of his performance, made note of the wonderful event on a fly-leaf in a volume of "The Free-Mason's Monitor," in these words: "February 11, of Masonry 5808. Made the experiment of burning the common stone coal of the valley in a grate, in a common fire-place in my house, and find it will answer the purpose of fuel, making a clearer and better fire, at less expense, than burning wood in the common way. (Signed) Jesse Fell.

"Borough of Wilkes-Barre, February 11, 1808."

Local history in the anthracite region abounds in interesting reminiscences of the early attempts to burn hard coal, and some tales are related which indicate that those who then advocated the use of that commodity as a fuel substitute for wood, and offered it for sale as such, were regarded as impostors and frauds upon the public; but within the brief space of a score of years after Judge Fell accomplished his miraculous feat, stone coal as a fuel began to come into use, and some small shipments thereof to eastern markets were made. Previous to about 1820 all attempts to bring anthracite into general use were simply a part of what may be termed the formative period, a period of uncertainty and doubt to which all the great reform movements of whatever kind must be subjected before their results become accepted by the people who have, in all ages, constituted our great American brotherhood.

Authorities seem to agree that the first shipment of anthracite coal in the United States was that sent down the Susquehanna in 1776 from mines at Wyoming to Harrisburg, and thence transported in wagons to the federal armory at Carlisle, where it was used throughout the war in the manufacture of firearms. In 1803 five arks, containing 200 tons of coal, were shipped by way of the Lehigh and Delaware rivers to Philadelphia, but on the passage down three of the arks were wrecked, and when the remaining two reached their destination their cargoes found no sale in the market, and were consequently thrown away, for the people could not make use of fuel coal at that time.

In 1812, according to a contemporary writer, Colonel George Shoemaker of Pottsville took nine wagon-loads of coal to Philadelphia, and, with much difficulty, succeeded in selling two of the loads, but gave away the remaining seven. He was denounced as an impostor in attempting to sell stones to the people under the pretense that it was coal, and only with much difficulty did he escape from the city without arrest. In 1815 William and Morris Wirtz sent an ark-load of coal through the Lackawaxen and Delaware rivers to Philadelphia, and there made a sale of it at prices varying from ten to twelve dollars per ton. In 1823 the first cargo of anthracite was shipped around Cape Cod and delivered at the Boston iron works, where it was regarded as superior to the Rhode Island coal. In 1825, at Phœnixville, in this State, anthracite was first successfully used for generating steam. Numerous instances of attempts, successful and otherwise, to make use of anthracite coal for domestic and manufacturing purposes are found in various published accounts, but the above will suffice to show something of the difficulties encountered in introducing that commodity during the early years of the last century.

In relation to the expense of early and more recent transportation, it may be said that the cost to Colonel Shoemaker in hauling his first nine wagon loads of coal from Pottsville to Philadelphia was $28 per ton; to-day the cost of transportation by rail between the same points is $1.70 per ton. All early efforts in taking coal to market by wagon were unprofitable, while boat navigation on the rivers, although less expensive than wagon transportation, was hazardous, and shippers frequently calculated on the loss of some of their boats and cargoes. A little later canals were built, at great cost, and while they afforded comparatively safe shipping facilities, and for many years did an immense business, they failed to give entirely satisfactory results, and eventually were superseded by the railroad. Sixty years ago, under favorable conditions, the journey from Scranton to Philadelphia required almost three days; to-day the same distance is traveled in a little more than four hours. In early times coal from the Lackawanna and Carbondale districts was sent to New York by the Delaware and Hudson canal from Honesdale to the Hudson river, 108 miles; by railroad, 18 miles, and by river navigation, 91 miles; total, 217 miles. From the Wyoming district ship-

Jesse Fell

Burned anthracite coal in grate, 1808. Reproduced by courtesy of Oscar Jewell Harvey ments were sent down the Susquehanna to tide water at Havre de Graçe, a distance of 194 miles.

In 1846 as many as 643 miles of water-ways had been opened to convey anthracite coal to market. The State of New York aided the Delaware and Hudson and Pennsylvania helped other companies to build canals. The cost of transportation on the canal was, in 1826, 1.5 cents per ton mile; in 1843; 1.25 cents; in 1845, 1 cent per mile. In 1833, complaint having been made of the high price charged for the transportation of coal by the canal companies, the State attempted to limit their powers in either mining or transporting coal, but this attempt brought no saisfactory results.

"Watson's Annals" says that "no regular sale of anthracite coal was effected in the Philadelphia market till the year 1825." In 1820 the old Lehigh Coal Company sent 365 tons to Philadelphia, "as the first fruits of the concern," and, "little as that was, it completely stocked the market and was sold with difficulty. It increased each subsequent year up to 1824, making in that year a delivery of 9,541 tons. In 1825 it ran up to 28,393 tons, and kept along at nearly that rate until 1832, when 70,000 tons were delivered. From that time it went regularly on increasing, until now, in 1839, it has delivered 221,850 tons. And now that it has got its momentum, who can guess where it will end?"

Another well-known writer says that "up to 1820 the total amount of coal sent from Wyoming is reckoned at 8,500 tons," and also that Colonel Washington Lee mined and sent to Baltimore 1,000 tons of coal, which were sold for $8 a ton.

In 1831 the North Branch Canal was completed to the Nanticoke dam, and John Coons sent the first boat, the "Wyoming," with a load of anthracite, some flour and other merchandise to Philadelphia. The route of the Wyoming was down the Susquehanna to Northumberland, where it entered the Pennsylvania Canal, and thence by way of the Union and Schuylkill canals to Philadelphia.

The early use of anthracite in industrial pursuits is thus referred to in the geological survey of Pennsylvania: "The first use of anthracite in connection with the manufacture of iron dates from 1812, when White & Hazard purchased one of nine wagon loads from the Schuylkill region at the cost of transportation, and successfully used the coal in heating the furnace of their nail and wire mill at the Falls of Schuylkill. The first successful use of anthracite as an exclusive fuel in the blast furnace was at the Pioneer furnace, built during 1837 and 1838, at Pottsville, by William Lyman of Boston. The first successful blast was blown in at this furnace on October 19, 1839. In recognition of the results obtained in this furnace, Mr. Lyman was paid a premium of $5,000 by Nicholas Biddle and others, as being the first person in the United States who had made anthracite pig iron continuously for 100 days. As early as 1824 attempts had been made to use anthracite mixed with charcoal in charcoal furnaces. These and many subsequent attempts prior to 1839 seem to have all met with failure. On July 3, 1840, David Thomas successfully blew in a furnace which he had built for the Lehigh Crane Iron Company at Catasauqua, on the Lehigh river."

In treating of the introduction of anthracite and bituminous coal in the manufacture of pig iron, so good an authority as Mr. Swank[1] says that this "innovation at once caused a revolution in the whole iron industry of the country," and that "a notable result of the introduction of mineral fuel was that, while it restricted the production of charcoal pig iron in the States, * * * which, like Pennsylvania, possessed the new fuel, it did not injuriously affect the production of charcoal pig iron in other States. Anthracite was the first to be largely used in American blast furnaces, and for many years after its adaptability to the smelting of iron ore was established it was in greater demand for this purpose than bituminous coal, coked or uncoked. In recent years the relative popularity of these two fuels for blast furnace use has been exactly reversed. The natural difficulties in the way of the successful introduction of anthracite coal in our blast furnaces were increased by the fact that up to that time when we commenced our experiments in its use, no other country had succeeded in using it as a furnace fuel."

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[1] In another chapter of this work Mr. Swank treats at length of the iron and steel industry in Pennsylvania, and therein he discusses the introduction and utility of coal in the production of those commodities.

The railway appears to have become a factor in the production and shipment of coal in 1827, when a gravity road was constructed from Mauch Chunk to the Summit mines, a distance of nine miles, and with an average descent of one hundred feet per mile from the mines to the river. At first mule power was employed in drawing coal cars back to the summit, but on the down trips this primitive "motive power" was transported in cars set apart for that purpose; and well authenticated accounts assert that the mules, true to their kind, having once enjoyed the pleasure of a ride down the gravity road, could not afterward be persuaded to make the trip afoot. This gravity road is still in operation, although mule power was soon replaced with stationary engines at each terminus. In 1831 a steam railroad was constructed to the eastern extremity of the company's works, where fourteen seams were developed in 1830, with an aggregate of 240 feet of coal.

In 1837 the construction of the Susquehanna and Lehigh Railroad from White Haven to the Wyoming valley was begun, and was completed in 1845. The first shipment of coal, 5,886 tons, over the road was made in 1846. The Beaver Meadow Railroad, opening an outlet from the Beaver Meadow coal basin, and the Hazleton Railroad to the basin of the same name, were in operation in 1840. The Buck Mountain Company's road was nearly finished in the same year. The Lehigh Valley Railroad was opened in 1855, transporting 9,003 tons of coal in that year and 1,295,419 tons in 1864.

In treating of the methods in use in the transportation of anthracite coal from the Schuylkill region in 1829, the excellent work entitled "Coal, Iron and Oil," says:

"It was not until 1827 that rails were used in the mines, and previous to 1829 the coal product was carted over common mud roads from the mines to the canal. Abraham Potts of Port Carbon, was the first to build a model railroad in the Schuylkill region. It led from his mines to the canal, a distance of half a mile. In 1829 the Mill Creek Railroad was built from Port Carbon to the Broad Mountain, about on the site of the present town of St. Clair, a distance of about three miles, and at a cost of $3,000."

Breaker in the Anthracite Coal Region

Engraved for this work from an original photograph

William Jasper Nicholls, in "The Story of the American Coals," says that Abraham Potts's "railway was made of wooden rails laid on wooden sills and was successfully operated in carrying coal, which, previous to that time, was hauled in wagons to the canal, and thence to market. In 1829 the directors of the Schuylkill Canal came to Pottsville and viewed this primitive road in operation. They were surprised when they saw 13 railroad cars loaded with one and one-half tons each, and they were amazed when Mr. Potts, the projector of this corduroy railroad, asserted that in less than ten years a railroad would be in operation along the line of their canal. After events proved that he was right in everything except as to time, for it was not until 1842 that the first train passed over the extension of the Philadelphia and Reading Railroad from Mount Carbon."

In 1896, according to Mining Engineer William Griffiths, 96.29 per cent. of the anthracite mines of Pennsylvania were owned or controlled, directly or indirectly, by the railroad companies or their auxiliary corporations, the coal companies. Since that year their operations have been extended still further, and to-day five of the largest companies control fully 90 per cent. of the entire anthracite coal fields. These vast corporations, in some instances consolidations of interests of lesser companies, are in great part the natural outgrowth of trade conditions, and in an almost equal degree the result of the later-day tendency toward concentration of corporate management in all the activities of business life. The effects of this movement upon the public welfare are subjects of wide discussion, and many arguments are put forth in their favor and against them. It is unquestioned, however, that the pooling of interests on the part of the mining and transportation companies, so far as it is known to exist, has been of benefit to the general public.

The following railroad companies (whether as such or in the allied capacity of mining companies) now own coal lands and are engaged in the transportation of coal productions: Delaware, Lackawanna and Western; Delaware and Hudson; Erie; New York, Ontario and Western; New York, Susquehanna and Schuylkill; Pennsylavnia; Central of New Jersey; Lehigh Valley; and Philadelphia and Reading. Each company has branches from its main line which extend to the collieries operated. The products of the mines, under normal conditions, constitute about 63.2 per cent. of the gross tonnage of the companies, and therefore the mining and transportation of coal has been to all of them in their capacity as operators and common carriers a principal source of revenue.

Mr. Griffiths computes[1] the percentage of coal field area controlled by the railroad companies as follows:

	Per Cent.
Delaware, Lackawanna & Western	6.55
Pennsylvania	6.24
Central R. R. of New Jersey	17.30
Lehigh Valley	16.87
Philadelphia & Reading	42.25
Delaware & Hudson	2.29
Erie & Wyoming Valley	1.82
Erie	.77
N. Y., O. & W.	.28
N. Y., Sus. & Schuylkill	.54
Del., Susq. & Schuylkill	1.38
Uncontrolled Tonnage	3.71
Total	100.00

A few incidents in connection with the history of some of these railroads[2] in relation to coal mining and transportation will be proper in this place. The company now known as the Delaware, Lackawanna and Western, one of the most extensive corporations operating in the anthracite regions, is the outgrowth of the old Lackawanna and Western, chartered in 1851, and originally was a coal carrying road from Scranton to Great Bend, but by the acquisition of other lines it reached eastward to the Delaware river, and a little later to tidewater and New York markets. More recent extensions of the lines westward reached Buffalo, Syracuse and Utica, and to-day it is perhaps the heaviest coal carrier in New York State.

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[1] The capacity of the mines is the basis upon which the percentage of coal produced is estimated.

[2] It is not within the province of this chapter to refer more than incidentally to the history of any of the railroads of the State, as that subject is treated at length under a separate heading.

The Pennsylvania Railroad Company dates its history as a coal carrier from about 1857, when it acquired from the State the main line of public works, comprising both canals and railroads, extending from Philadelphia to Pittsburgh. Now the company operates about 13,000 miles of road, extending into thirteen States. In 1895 its aggregate coal and coke shipment over lines between Pittsburgh and Philadelphia amounted to 26,800,000 tons, or about 57 per cent. of its total tonnage.

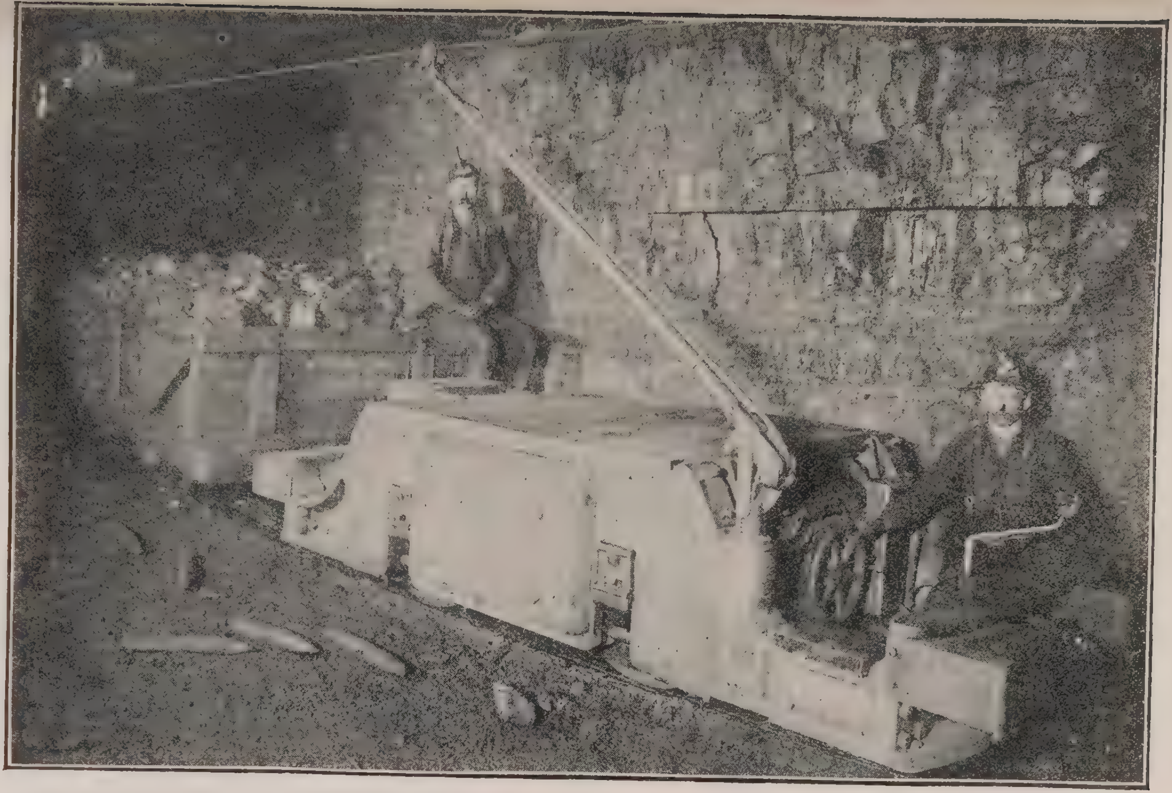
The Central Railroad of New Jersey, with its auxiliary leased lines, is one of the most important and extensive coal carrying roads in the country. It operates about seven hundred miles of railroad in this State and New Jersey, and uses 17,000 coal cars in that department of its transportation business. The Lehigh Canal forms a part of the Jersey Central carrier system, and in itself is a historic thoroughfare of traffic, having to its credit the first considerable shipment of anthracite coal in the country, and a record of uninterrupted operation since 1820, when three hundred and sixty-five tons of coal were sent from Summit Hill to Philadelphia.

The Lehigh valley system extends over 1,000 miles of track, owned and leased, and dates its origin to the year 1847, when its ancestor, the Delaware, Lehigh, Schuylkill and Susquehanna Railroad Company, was chartered. The annual anthracite tonnage of the Lehigh Valley company is more than 7,000,000 tons, exclusive of its operations in bituminous coal. The company owns the Lehigh Valley Coal Company and the Snow Shoe property in Centre county, including about 45,000 acres of bituminous coal ands. It has 11,000 eight-wheel and 20,000 four-wheel cars in its coal carrying department.

The Philadelphia and Reading Railroad may be said to have been "brought up" in the coal carrying trade and to have become an expert in that line of business. Like the other large companies, the Reading is the result of consolidation of shorter lines, by which means it crossed the State, tapped the richest coal fields and carried their products to tidewater at Philadelphia and New York, as well as other important points. In 1871 the company bought 100,000 acres of coal lands for $40,000,000, and began mining on its own account, and in 1873 the interests of several individual producers were added to its operations. The company now ranks first among the anthracite coal carrying corporations in the country, and is well equipped for that especial service. Ten years ago it owned 892 coal and freight locomotives, 29,220 eight-wheel and 26,248 four-wheel coal cars, 487 barges, 21 steamboats and 15 steam tugs for the movement of its coal and freight.

The Delaware and Hudson company, until quite recently a carrying corporation employing both railroad and canal service, is one of the oldest operators in the anthracite fields, and traces its history to the year 1829, although the canal company was chartered several years earlier. In 1833 the company carried 19,000 tons of coal from Honesdale to the Hudson river, and increased the amount to 150,000 tons in 1834. It now operates thirty collieries, which, in 1899, produced 4,429,575 tons of coal. It has 688 miles of railroad; the canal was abandoned five years ago.

The Erie Railroad tapped the anthracite coal fields on its own account in 1881, when its management purchased 30,000 acres of land and in addition absorbed the Blossburg Coal Company. Later on other valuable properties were acquired, notably the Hillside Coal and Iron Company and the Towanda Coal Company. The Erie Railroad, in its present physical construction, is the result of various consolidations and leasehold interests, and not entirely without the operations of the law. As reorganized in 1895, the



Coal Mine Trolley, 600 Feet Underground

Reproduced especially for this work from an original photograph

system covers more than 2,000 miles of track, and 17,000 cars are required to handle the coal output. In 1901 the Erie and Wyoming Valley Railroad and the mining interests of the Pennsylvania Coal Company were purchased by and became a part of the Erie properties.

The New York, Ontario and Western Railroad, successor to the old "Midland," as best known in railroad circles, draws its supply of anthracite from mines in the vicinity of Carbondale and Scranton. It has a trackage of 500 miles and an annual coal production of more than 1,500,000 tons. The Delaware, Susquehanna and Schuylkill Railroad, the main line of which is between Drifton and Gowen, sends about 2,000,000 tons annually to market. The New York, Susquehanna and Western, under the name of "Jermyn," carries annually about 1,500,000 tons.

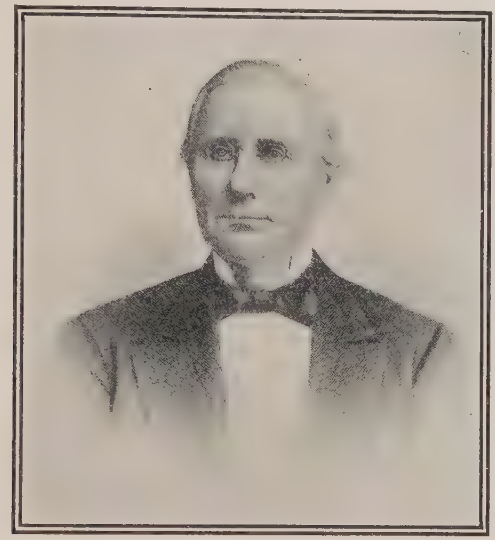
In the preceding paragraphs the somewhat indiscriminate use of the expressions "railroad company" and "mining company" is apt to confuse the reader who does not understand the relations of these corporate organizations. Under the constitution no incorporated company doing business as a common carrier shall, directly or indirectly, prosecute or engage in mining or manufacturing articles for transportation over its road; nor engage in any other business than that of common carriers, or hold or acquire land, except for the purpose of carrying on its business. Under this constitutional prohibition the railroad companies are compelled to comply with the letter of the law, but whether the spirit thereof has been evaded is a question open to discussion. There is no requirement of law that prohibits the members of one corporate company having a like interest in another, hence officers, directors and stockholders in a railroad company may also have similar interests in a coal mining company. This condition frequently obtains in this State, and the men who own and control railroads also own coal lands and carry on mining operations, although separate corporate companies carry on each branch of business. These interests are so closely allied that only with difficulty can they be separated, and it is customary in ordinary speech to refer to a railroad company as owner of mining interests, whereas, in fact, such is not and cannot be the case. The mining companies, presumably, profit from the operation of the mines themselves, and the railroad companies, in like manner, derive revenues from the transportation of coal to markets.

The question of transportation, particularly its cost, has been the subject of discussion in railroad circles for many years, and so long as competition existed among the operators and carrying roads a satisfactory adjustment of the matter was not reached. It is said that in 1895 unrestrained competition resulted in a loss to the carrying companies of more than $4,000,000. Various agreements have been entered into at one time and another as a remedy for existing evils, but as often as consummated they have been broken by the parties, and it was not until the organization of what has been styled the syndicate, in 1901, that all interests became established upon a mutual and equitable basis.

The mere mention of unionism among mining employes suggests an all-powerful element of life in the coal producing regions of the State. The origin and gradual increase of unions, and the causes which led to their formation cannot be made a subject of discussion in this chapter, yet in a brief way there may be noted the names and date of organization of such of these bodies as have been factors in the history of the anthracite industry during the last fifty years.

The Bates union is believed to have been the pioneer of the mine employes' organizations in the anthracite region, and was in existence during the period of 1848-50. It had a membership of 5,000 persons. The Workingmen's Benevolent Association was chartered in 1868 and was continued until 1875, when it dissolved. It was a popular organization of social and benevolent character, and acquired a total membership of 30,000, or about 85 per cent. of the mining employes in the region. The Miners' and Laborers' Amalgamated Association, and a kindred organization styled

Knights of Labor, flourished from 1884 to about 1888. They were consolidated in 1887, and attained a total membership of 40,000. The present United Mine Workers' Association began organizing in 1897, and has since become the effective labor body of the region, its membership including from 90 to 95 per cent. of the miners in the anthracite fields.



Daniel Agnew

President judge seventeenth judicial district 1851; associate justice State Supreme Court 1863-1873; chief justice 1873-1879. Made especially for this work from an engraving in possession of the Western University of Pennsylvania

Under the present laws of the State miners of coal rank as skilled workmen, and must possess certain qualifications to entitle them to serve as miners. Before being "certificated" each applicant must have labored in some capacity in the mines for two years, and must have acquired a sufficient knowledge of the work in detail to meet the requirements of any emergency that may arise in connection with the duty assigned to him. Thus mining has become a "trade," and, from the peculiar dangers which attend its prosecution, it is safeguarded by law as a measure of protection of life and property and not, as is sometimes charged, for the protection of a certain class of workmen.

Naturally, and in conformity to the general tendency in all trade circles, the miners and mine employes have perfected an organization, as is their right, for mutual improvement and protection against what they are disposed to term the oppressions of capitalist employers. But, whatever the justice or injustice of this contention on the part of mine workers, the fact remains that they have perfected a strong organization, and through their "unions" have become powerful factors in the history of coal mining in this State. Frequently during the last thirty years the miners' unions have arrayed themselves against their employers, and "strikes" have followed, generally with no substantial success to the miners' cause, and always with considerable financial loss to the employers and much inconvenience to the public. Strikes are only the exercise of rights, sometimes justifiable and as frequently ill-advised, but the methods often resorted to in attempting to enforce a redress of grievances can find no justification in the public mind.

The "great strike" of 1877 had its origin in difficulties between the railroad companies and their employes, and soon the mining interests of the entire Scranton and Lackawanna districts became involved in the controversy. Disorder, riot and bloodshed followed, no good results were accomplished, and only a disturbance in business circles and some personal losses were its ultimate result.

A similar disturbance arose in 1887 and involved the mining interests of the Lehigh and Schuylkill districts. It was continued about three months, and resulted in no success to either side, but with indirect loss to both. The strike of 1900 continued six weeks, and was a general struggle between organized labor on one side and capital (represented by mining and transportation companies) on the other. In this controversy the "union" was not materially strengthened, and its recognition was not secured, but the miners generally were granted a slight advance in wages. In the great contest between the United Mine Workers' organization and the combined forces of the coal operators which began in May, 1902, there was the most determined arrayal of opposing elements known to the history of strikes in the coal regions. The merits of the claims of the contending parties are not subject to discussion in this article, yet so persistently was the contest waged that an adjustment of difficulties was not agreed upon until the middle of October, and then only through the energetic action of the President of the United States, Theodore Roosevelt.

The anthracite mines of Pennsylvania furnish employment to nearly 150,000 workmen[1] while in operation under normal conditions, and in the carrying trade several thousand additional men are constantly engaged. Again, because fuel is cheaper and more readily obtained there, the anthracite districts have become noted for the number and employing capacity of their industrial enterprises; and it is estimated that the number of persons who directly and indirectly gain a livelihood from these fields aggregate more than 750,000 men—a vast army of wage-earners comprising representatives of dozens of nationalities.

It has been estimated that the total anthracite production in Pennsylvania previous to 1820 amounted to 18,000 tons, and that of the aggregate 10,000 tons came from the Wyoming region, 3,000[2] tons from the Lehigh region, and 5,000 tons from the Schuylkill region. In 1820 the number of tons mined was less than 2,000, and it was not until 1829 that the total production reached 100,000 tons, the output in that year being 133,203 tons.

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[1] The reports of the bureau of mines show the number of employees in and about the anthracite mines for the last ten years as follows: 1892, 130,197; 1893, 138,021; 1894, 139,695; 1895, 143,605; 1896, 147,670; 1897, 149,557; 1898, 142,420; 1899, 140,583; 1900, 143,726; 1901, 147,651.

[2] The regions here referred to were comprised as follows: Wyoming region, the counties of Luzerne and Sullivan; Lehigh region, the counties of Carbon, Columbia and part of Luzerne; Schuylkill region, the counties of Schuylkill, Northumberland, Dauphin, Lebanon and part of Columbia.

The million-ton mark was first attained in 1837, and the ten-million-ton mark in 1863. In 1901 more anthracite coal was produced than in any previous year, the total for that year alone exceeding the grand total for all the years down to 1855. As evidence of the constant increase in production the following table has been prepared, showing the number of tons of coal produced in the years indicated:

Year.	Production.	Year.	Production.
1820	1,965	1865	10,783,032
1825	38,499	1870	17,819,700
1830	209,634	1875	20,643,509
1835	678,517	1880	24,843,476
1840	7,008,220	1885	33,520,941
1845	2,344,426	1890	40,166,327
1850	3,863,365	1895	50,846,104
1855	7,684,542	1900	51,217,318
1860	9,807,118	1901	59,905,951

BITUMINOUS COAL

The source of supply of bituminous coal, as far as relates to Pennsylvania, covers a very large part of the State west of the Alleghany mountains, where millions of tons are mined annually to feed the furnaces of vast industries and the heaters in public and private buildings over a wide extent of territory. The highest points of the Alleghanies are capped with the Conglomerate which underlies the bituminous coal beds, or by the lower members of the series, and the strata, dipping gently towards the west, the formation gains in thickness in that direction, and overspreads the whole west part of the State, excepting the northwest corner, and passes on into Ohio. East of the Alleghanies the coal deposits are the anthracite, except an area of semi-bituminous on Broad Top mountain. While this coal exists in many places below the Millstone Grit, in varying measures of minor thickness, it is only above the Grit that it is found in measures of from 300 to 1,000 feet in thickness and of wide extent. The coal beds alternate with strata of shale, limestone, sandstone, etc., and there is a close relation between the beds and the intermediate strata. Most of the coal beds rest on grayish or whitish soft clay, varying in thickness from a few inches to thirty feet; none has yet been found on the limestone without an intermediate bed of clay. In most cases, as a coal bed at its base becomes mixed with clay, so it passes at its upper surface into black bituminous shale or slate, which is laminated like the coal, or is in thin layers and mixed with the remains of plants which entered into the coal composition. Sometimes, however, the roof of the coal formation is sandstone, and rarely limestone. In the plant remains are often found fossil shells and bones and teeth of fish.

The origin of this coal is now clearly understood, from its geological distribution and its constituents. The old hypothesis, now long since abandoned, was that it was a mere bituminous compound deposited like strata of other character. But free bitumen does not exist in nature, and hence deposits of it in the rocks would be an anomaly if we could not positively indicate its origin. It is proven by ocular examination that it is composed of woody matter or vegetable remains, identical with the materials that go to the formation of peat in different parts of the world. It has been written by an acknowledged authority that "not a single case has been recorded in regard to the formation of coal which cannot find its counterpart and explanation in some of the phenomena attending the present formation of peat." Bituminous coal contains 81.2 of carbon; anthracite contains 95.0, and lignite, 68.7, and it is believed by many that bituminous coal was debituminized by heat to produce the anthracite.

The first, or lowest, of the regular workable beds of bituminous coal is found in the Conglomerate of the anthracite fields and some of the outlying basins of the Alleghany field; this is comparatively an unimportant bed and produces only the block, or furnace, coal. The next one comprises two excellent beds, generally almost or quite united as a single one, but always separated by a streak of fire clay, or slate, which sometimes expands to twenty feet in thickness. These beds when joined are from four to seven feet thick. Their horizon is the most extensive of any of the beds and nearly equal to the entire coal field. Above this group is found a micaceous sandstone, which can be identified in all of the great American coal fields of the Conglomerate age; it is from twenty to sixty feet in thickness and is followed by shales, fossiliferous limestone and the buhr-stone iron ore, which are generally present in the Alleghany measures. Next in the anthracite, and generally in the bituminous, fields are two thin, unworkable beds, one of which, however, supplies a valuable cannel coal. Above these occur fifty to sixty feet of shale and sandstone, in which is a single coal vein from thirty inches to four feet thick and usually pure and workable. Separated from this by the Freeport limestone (eight feet thick) are two or three beds from two to four feet thick, which are sometimes united in a single bed. This constitutes the famous mammoth bed of the anthracite region and the Freeport bituminous beds of western Pennsylvania. Next is found from twenty to fifty feet of soft black shales on which rests the Mahoning sandstone, the largest regular sand rock in all the coal measures, ranging from fifty to seventy-five feet in thickness. Streaks of quartz crystals are found in this rock. Above this are two thin, impure beds of coal, divided by a few inches of fire clay; this becomes a single bed in the Alleghany region. Next come from two hundred to three hundred feet of shales, slates, sandstone and limestone, followed by the great Pittsburg bed, which has been and is so productive of gas, coking, steam-making and household bituminous coal of every variety excepting the block and cannel. This bed is from six to twelve feet in thickness. Between it and the mammoth bed, before mentioned, are from three hundred to four hundred and fifty feet of the lower barren measures; these are marked in the bituminous as well as in the anthracite fields. The total thickness of the Pennsylvania coal measures is about 3,000 feet.

Immediately to the west of the anthracite coal fields of eastern Pennsylvania is a semi-bituminous district, the volatile matter in the product of which constantly increases as we near the central part of the bituminous field. The Carboniferous formation terminates in the north part of the State, where six of the great flexures of the strata above noticed give rise to six coal basins of rich and productive mines. From these is taken the well-known Blossburg coal, which is so extensively consumed in producing steam.

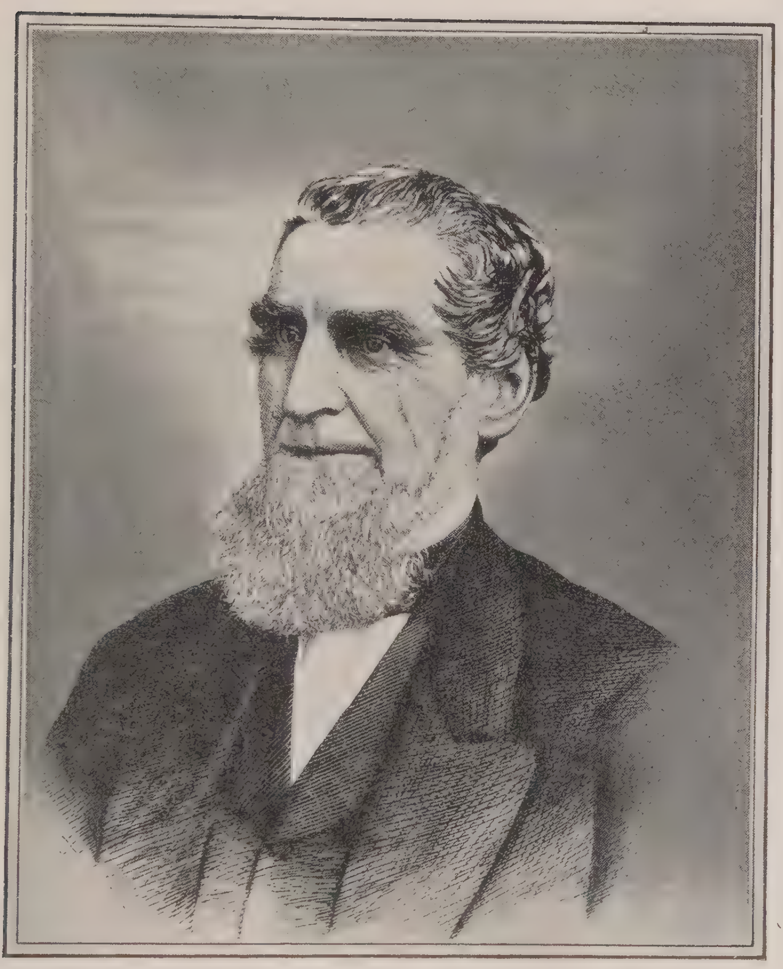
In the region of Pittsburg the four or five lower beds which alone occur farther north, disappear on the surface, dipping under a shale formation in which there are no coal seams. Above the barren measures and on the high ground in the vicinity of Pittsburg is another excellent bed of coal, which is named from the city, the greater part of the product of which is consumed in the southwest part of the State.

What is geologically known as the Great Alleghany Coal Field covers a large part of western and northwestern Pennsylvania, the southeastern part of Ohio, the western part of Maryland, a large part of West Virginia, and as it continues on to the southwest, gradually narrows as it crosses the States of Kentucky, Tennessee, and part of Alabama. The total length of this great coal field is more than 800 miles and its maximum width between Cumberland, Maryland and Newark, Ohio, is 180 miles. The part of this great tract with which we are here interested covers the southwestern part of Pennsylvania, extending, roughly speaking, from the Broad Top mountain northeastward past a central east and west line across the State, and thence west to the State line. The northern edge of this coal area is, however, prolonged well towards the north line of the State by five great projections from the main body and by numerous small areas of coal producing territory. These projections and detached coal areas were formerly an integral part of the Great Alleghany Coal Field as originally formed, and constituted a vast level or undulating plain, which dipped gently towards the west and southwest. It was ultimately separated from the main field by the action of the swift-flowing surface waters, and it is here that is found the semi-bituminous coal that exists between the anthracite region of the eastern part of the State and the bituminous region of the west part.

These northernmost semi-bituminous deposits have been known as the Ralston, the Barclay (or Towanda), the Blossburg, and the North Mountain coal fields, or basins. The North Mountain field occupies parts of Sullivan, Wyoming and Luzerne counties, and is vast in extent, but its supply of coal is limited. A vertical section through its deposits shows a close resemblance to the anthracite measures and a complete identity of seams, which form the connecting link between the two formations. The Barclay coal field lies about twenty miles northwest of the North Mountain field, in the second basin from the Alleghany escarpment, the North Mountain being the first. It is "the extreme northeastern part of the Alleghany basin and a continuation of the Ralston basin, which, to the southwest, forms the Farrandsville and Snow Shoe basins, and continues by Ebensburg, Johnstown, etc., as the first basin west of the Alleghanies; that is, the first, or North Mountain, formation ceases opposite Williamsport, and does not cross the Susquehanna river." ("Coal, Iron and Oil," p. 309.) The Barclay field covers about 100 square miles, but not more than one-tenth of it has produced workable coal. The scattered productive formation was mostly denuded by action of water. The Barclay coal is excellent for steam-making, cokes with great difficulty, and contains only a small percentage of bitumen.

The Ralston basins are only a continuation of the Barclay and consist of small patches of the coal measures containing only the lower beds.

The McIntire region was opened in 1870, the mines being situated near the village of Ralston, in Lycoming county. The



Asa Packer

Philanthropist; member State Legislature 1844; first president Lehigh Valley Railroad Company, 1855; congressman 1853-1857; founder of Lehigh University 1865

coal here lies nearly 1,000 feet of perpendicular height above the level of Lycoming creek, from which elevation it is let down into the valley by an inclined plane nearly half a mile in length. The Towanda deposit is an extension of the McIntire basin and situated on the summit of Towanda mountain. The one seam of coal found here is of excellent quality. The Snow Shoe basin is in Centre county, the deposit covering only about eight by four miles in area. The Clearfield basin was opened in 1871 and soon assumed importance as a source of coal supply. There are several seams of good workable coal, the product being somewhat softer than the Blossburg coal. The mines are principally on the Moshannon creek, along which they extend a distance of more than twelve miles. Here among the hills coal was taken out for home consumption from the time of early settlement, and was shipped along the Susquehanna river in barges during seasons of high water for use by blacksmiths. The strata of the Clearfield basin extend to the headwaters of Moshannon creek.

The Johnstown region, of Cambria county, seventy-eight miles east of Pittsburg, has five seams of workable character, from which the annual output has always been very large and almost wholly consumed at home in the manufacture of iron and steel. The aggregate thickness of these coal measures is three hundred and twelve feet, and they contain valuable beds of iron ore and limestone, supplying all the elements for the manufacture of iron and the home consumption of coal.

The Blossburg basin is situated in Tioga county, Pa., and is the northwest extremity of the third Alleghany basin. The coal from it is richer in bitumen and is a free-burning, dry product, excellent for steam-making purposes. Like all the other detached basins of this region, it consists of many small coal deposits which are separated from each other by deep erosions. The area of this part of the third basin is approximately fifty square miles. Blossburg coal was sold during the twelve years from 1853 to 1864, inclusive, to the amount of nearly 1,500,000 tons.

The Broad Top coal region is situated in Huntingdon, Bedford, and Fulton counties, with an area of more than seventy-five square miles, the field widening towards its southern boundary in Bedford and Fulton counties. The region is detached and independent and its product, coming from an area between the anthracite fields on the northeast and the great bituminous region on the southwest, possesses in a degree the qualities of both; it is therefore classed as a semi-bituminous coal. The average thickness of the workable seams is twenty-six feet and of the coal rocks nearly 1,000 feet. The immediate coal region was reached by railroad in 1856 and during the latter part of that year 42,000 tons of the coal was sent to market. This quantity was nearly doubled in the following year, and from that time the annual product rapidly increased.

The Alleghany coal field, as far as it relates to western Pennsylvania and eastern Ohio, is separated from the Central coal field lying farther west and of about the same width as the Alleghany field (180 miles) by the Devonian and Silurian formations of Ohio and Indiana. Pittsburg coal does not exist to any great extent west of the Ohio river. In now considering the purely bituminous coals of western Pennsylvania we may quote as follows from Prof. J. P. Lesley's valuable *Manual of Coal:*

"The Lower Coals form in western Pennsylvania a system by themselves. Clinging, as it were, to the face of the Conglomerate, the lower system fared better than the upper one, and has been left to cover an immense area. In fact, it forms by far the largest part—perhaps four-fifths—of all the coal remaining on the surface. In Ohio—except near Wheeling—and in all the western States, it is the only coal, and may have been originally the only coal deposited. . . . . Wherever the dip is gentle, this lower system prevails, the upper being swept away; but where the dip is steep and in the middle of the narrow troughs, it receives the upper system on itself. It furnishes the beds of northern and western Pennsylvania as far south as the Conemaugh or Kiskiminitas, those of the Allegheny river, and all the country northwestward of the Ohio. It occupies the west and south of Virginia, and provides the coal of eastern Kentucky and Tennessee. The cannel is, perhaps, exclusive of this system. . . . . At that time [referring to the early survey of Pennsylvania] a large bed in the upper bed of the system was familiarly called 'Elk Lick coal,' from its locality near the romantic falls of that name in Somerset. This bed, which is the upper Freeport bed of the Kiskiminitas and Allegheny rivers, seems to be represented by the large upper coal of the Kanawha and Coal rivers of Virginia, and by the great bed at Karthause and Clearfield to the north. It marks the upper limit of the lower coal beds, and is covered at no great distance by the remarkable sandstone strata hereafter to be discussed [the Mahoning sandstone].

"This coal bed sometimes rivals the Pittsburg bed in size and purity of minerals, but wants its regularity. This is its fault in common with all the beds of the lower system: they cannot hold their own for any great distance in any given direction. This is particularly true of the large bed at Buck mountain, which lies nearly upon the Conglomerate, and seems co-extensive with the coal field.

"At Towanda, on Broad Top, at Johnstown, on the Tennessee river, even at St. Louis, its sections are scarcely to be told apart. Everywhere it is about fifty feet above the Conglomerate; everywhere it has a small satellite some yards below it; everywhere it is itself a variable stratum from five to twenty feet in thickness—a double bed, with an even roof and an uneven floor, rising and falling stormily on a sea of fire clay, which sometimes has a depth of thirty feet."

The bituminous coal field of Pennsylvania covers an area of more than 12,000 square miles—the largest in the world. The principal mining centers of this region are situated along the lines of the Philadelphia and Erie railroad, the Pennsylvania Central railroad, the Panhandle branch of the Pittsburg, Cincinnati and St. Louis railroad, the Alleghany railroad, the Erie and Pittsburg railroad, in the Shenango valley block coal region, and along the Youghiogheny, Allegheny, and Monongahela rivers. These several railroads have in recent years, by consolidation and other changes, become known by other names.

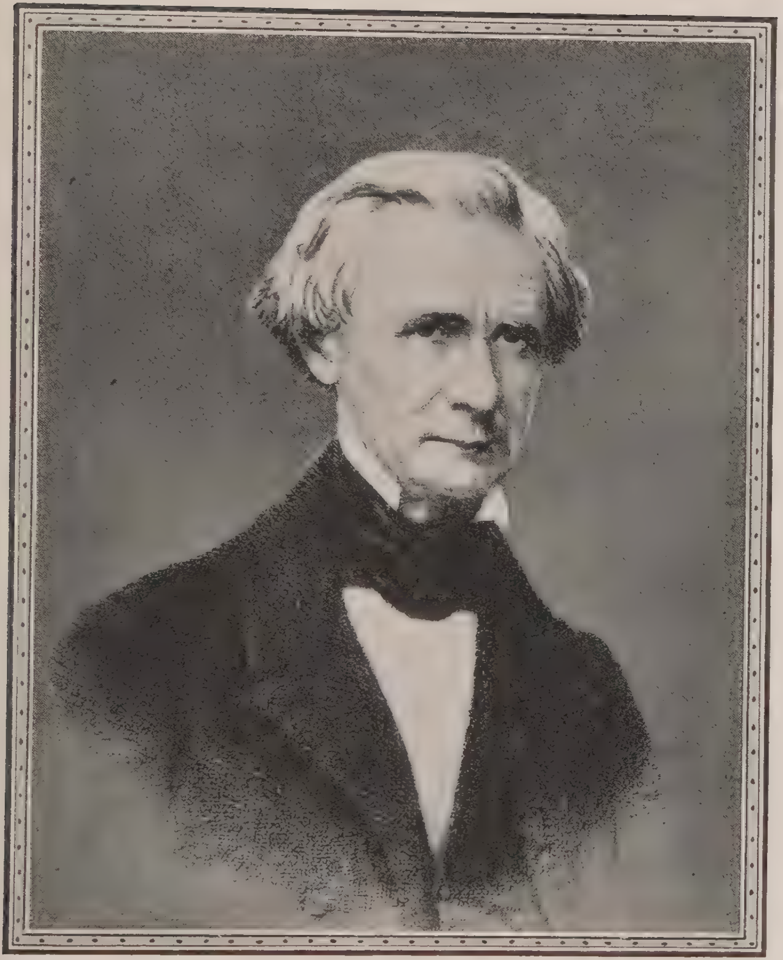
Of this series the Monongahela region is by far the most important. It extends from the State line of West Virginia to the city of Pittsburg, a distance of ninety-five miles. Along the slopes of the Monongahela valley the famous Pittsburg coal crops out on either side of the river, giving access to the coal seam by drift mining. The coal lies in the earth with great regularity and with just sufficient dip to drain the mines of water. The coal is the best in the United States for the generation of steam, the manufacture of gas, the production of coke, and for domestic use. The bed is from four to fifteen feet in thickness and usually rests in two benches. In the vicinity of Pittsburg, where the coal is from nine to eleven feet thick, the two seams are separated by a layer of fire clay of from eight to fifteen inches in thickness. The upper coal is so poor in quality that it is not saved. As about fifteen inches of the bottom coal is left in the mine, only about four and one-half feet are taken out. At some points in Washington and Allegheny counties, and elsewhere in the region, the whole height of the bed is worked, the product being all of excellent quality. In Westmoreland county most of the mine openings are by shafts, while in Allegheny, Washington, and Fayette counties the coal is all obtained by drift mining. This famous coal bed is known throughout the world and the importance of its product in developing the prosperity of the city of Pittsburg, and less directly of the whole State and country, can scarcely be estimated. Every year during more than half a century has seen the rich coal dug from the earth and transported down the Monongahela river and over the railroads in millions of tons, bringing to the region an enormous flow of wealth that never ceases.

The coal mined on the Youghiogheny river in the vicinity of Connellsville is celebrated for its coking properties, which has given it an immense consumption not alone in Pittsburg, but in many of the western and northern States. A hundred bushels of this coal produces one hundred and twenty-five bushels of coke, forty bushels of which will smelt a ton of iron from a rich ore. The coal bed is nearly eleven feet in thickness, but only seven or eight are mined.

The Shenango valley coal region occupies the extreme outcrop of the coal measures of western Pennsylvania, the mines being mainly situated in Mercer county. The block coal of the region just east of Sharon is usually found in one seam, the lowest of the series, and is the equivalent of the block coal of the Mahoning valley and of the Massillon coal of Ohio. It is an excellent furnace coal and is consumed in its raw state. At Greenfield, seven miles southeast of Sharon, an upper coal was discovered some thirty years ago which had an average workable thickness of four feet; but the quality was poor, when compared with the block coal. Like the lower coal, it lies in patches of unequal levels, and the troughs in which it is found are generally wider than those which enclose the block coal. Professor Rogers located the lower coal of this valley below the Conglomerate, and sometimes patches of the Conglomerate rock form the roof of the coal bed, but the true place of this seam is in the coal measures, of which it forms the base. It rests upon the upper surface of the Waverly sandstone, and sometimes upon a coarse grained sandstone. ("The Coal Mines," Roy, p. 266.)

Bituminous coal was mined near Richmond, Va., about 1750, and was extensively used during the Revolutionary war. It was transported to Philadelphia in 1779. In 1789 its price in that city was 1*s.* 6*d.* per bushel. In later years and during the war of 1812 this coal became scarce in Philadelphia, but it was the principal source of supply for many years for that section of the State and down to 1850 supplied the Philadelphia gas works and those of other cities. During twenty years after about 1830 the importation of bituminous coal from Great Britain to Philadelphia steadily increased, as the Virginia supply diminished. About 1856 the coal of western Pennsylvania came into use in the city.

The first coal mined west of the Alleghanies, as far as is shown by records, was in 1760, when Captain Thomas Hutchins visited Fort Pitt in July and found a mine open on the opposite side of the Monongahela river, from which coal was taken to supply the garrison of the fort. The fort was then under command of Major Edward Ward, who obtained coal from near the summit of what has been known as Coal Hill, sending it down to the flat in a shute. This pit was long known as Ward's pit. Colonel James Burd already in the previous year had mentioned the discovery of coal along Redstone creek and Coal Run near Brownsville. In 1766 Rev. Charles Beatty mentions the deposit in Coal Hill, where it "had been burning almost a twelvemonth entirely under ground." The non-importation agreement made by Philadelphia merchants, in 1765, mentions coal as one of the commodities that could be brought from Great Britain as ballast. In a paper read by William J. Burke before the Pennsylvania Historical Society in January, 1875, he quoted Penn manuscripts showing that the Penns were well aware of the existence of coal at Pittsburg and its value for fuel, as early as 1769. Thomas Penn, in that year, sent a letter from London to his son, John, directing him to have a survey made of 5,000 acres of land around Pittsburg, including the site of the town. In May of the same year he wrote regarding this survey, saying: "I would not engross all the coal hills, but rather leave the greater part to others who may work them." The oncoming war troubles prevented the execution of these plans at that time. In 1784, the Penns still retaining their proprietary interests, which included the manor of Pittsburg, surveyed the town into lots and in the same year the privilege of mining coal in the "great seam" was sold at the rate of £30 for each mining lot, extending back to the



Simon Cameron

Editor; banker; contractor; United States Senator, 1845-1849; secretary of war in President Lincoln's cabinet, 1861-1862; minister to Russia, 1862; United States senator, 1857-1861, and 1867-1877; born 1799; died 1889

center of the hill. ("Iron Making and Coal Mining," Swank, pp. 111-12.)

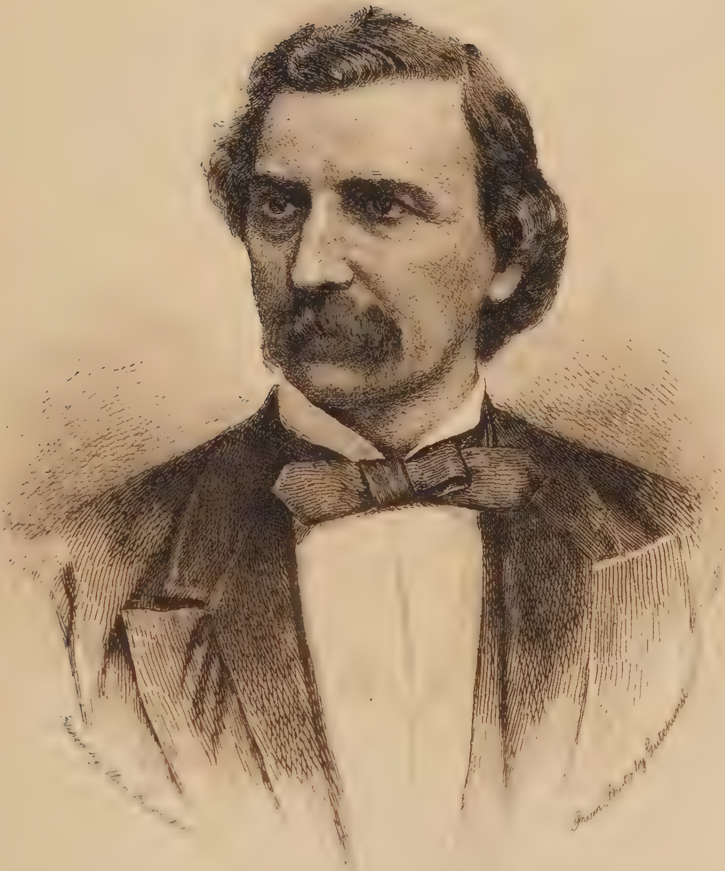
From this time forward the demand for the rich coal increased rapidly for both domestic and manufacturing purposes. Various minor industries came into existence which drew upon the supply to a considerable extent. The first steam engine was put in operation in Pittsburg in 1794, and salt was produced there by evaporation at a very early day. Coal pits were opened on the Pittsburg side of the river at Minersville and elsewhere in 1797, and a glass works was established on the south side of the river at a point where coal could be had near at hand. The first twenty years of the consumption of coal at this point saw a marvellous increase. Numerous steam engines were installed for a variety of manufactures, the population multiplied and all drew heavily upon the fuel that was to constitute so great a factor in the development of the place. A newspaper of 1814 said: "This place is celebrated for its coal banks. . . . . It is in general use in all private houses and the extensive manufactories established through the town. Coal is found in all the hills around this place for ten miles at least and in such abundance that it may almost be considered the substratum of the whole country. . . . . Little short of 1,000,000 bushels are consumed annually. The price, formerly 6 cents, has risen to 12. There are forty or fifty pits opened" [on Coal Hill].

The first coal was shipped from Pittsburg in 1803, when the *Louisiana* was "ballasted with the fuel, which was sold in Philadelphia for 37½ cents a bushel." In 1820 coal mining was begun at Coal Centre (Greenfield), and ten years later at Limetown, both on the upper Monongahela, in Washington county. Most of the product of those early years was put on board of boats sixty-eight to eighty feet in length, sixteen feet wide, and five feet deep, holding from 4,000 to 6,000 bushels. On these it was floated to Pittsburg and the Ohio river towns. A directory of Pittsburg for the year 1837 has a list of ten collieries on Coal

Hill, which produced over 5,000,000 bushels at that one point. It was then estimated that the total product was 12,000,000 bushels, the selling price of which was about 5 cents per bushel.

The coal industry of this immediate region received a powerful impetus from the operations of the Monongahela Navigation Company, which created a slack-water navigation by means of dams from Pittsburg to the West Virginia line. The first survey for this improvement was made in 1838, and between 1841 and 1844 the system was completed to Brownsville, in the southeastern part of Washington county. Similar works were completed on the Youghiogheny river in 1850, which have since been abandoned. The Pennsylvania railroad did not reach Pittsburg until 1852, giving the navigation company eight years of great prosperity. Between 1845 and 1847 the revenues were nearly doubled. The toll on coal over the entire navigation system was $2.91 per 1,000 bushels. There was also a large revenue from passenger traffic, the number carried in 1850 being more than 18,000. But with all this it cannot be said that the confident expectations of the company were wholly realized. The expense of operation, and particularly the cost of repairing damages by floods, ice, etc., was great. The shipments through the locks of the system in 1844 were 737,150 bushels; in 1850 they were 12,297,967 bushels, and in 1860 they were 37,947,732 bushels; in 1870 they had risen to 57,596,400 bushels, and in 1880 to 84,048,350 bushels, with still further increase in later years. The construction of the railroads into this region added greatly to the transportation facilities and widened the field of consumption.

The Pittsburg coal region includes parts of five counties—Allegheny, Washington, Greene, Westmoreland, and Fayette. Definite geographical limits cannot be fixed, and it is also difficult to give it geological limits, for the location of the different coal basins along northeast and southwest belts of the country at angles to the geographical points of the compass, and the great transporting mediums of the district make them only in part tributary



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to Pittsburg itself, a large part of their product going to other markets.

The year 1843 saw what was probably the first use of bituminous coal in Pennsylvania for the reduction of iron ore in blast furnaces. In that year it is recorded that coal in the vicinity of Sharon, without coking, "has been successfully tried for smelting iron in a common charcoal furnace." This was doubtless only an experiment, but its significance was most important. "In July, 1845, Himrod & Vincent, of Mercer county, Pa., blew in the Clay furnace, not many miles from the Ohio line, on the waters of the Shenango. About three months afterwards, in consequence of a short supply of charcoal, ... a portion of coke was used to charge the furnace. Their coal belongs to seam No. 1, the seam which is now used (1875) at Sharon and Youngstown, in its raw state, variously known as 'free-burning splint' or 'block coal,' and which never makes solid coke. A difficulty soon occurred with the cokers, and, as Mr. Himrod states, he conceived the plan of trying his coal without coking. The furnace continued to work well, and to produce a fair quality of metal." At the same time, Messrs. Wilkinson, Wilkes & Co. were building a furnace on the Mahoning, at Lowell, Mahoning county, Ohio, intending to use mineral coal from seam No. 1, on which they owned a mine near Lowell. The credit of making the first iron with raw bituminous or semi-bituminous coal, in the United States, belongs to one of these firms. An account of the blowing in of the Lowell furnace, on the 8th of August, 1846, was printed in the Trumbull Democrat, of Warren, dated August 15, 1846, where it is stated that to "these gentlemen [Wilkinson, Wilkes & Co.] belongs the honor of being the first persons in the United States who have succeeded in putting a furnace in blast with raw bituminous coal. . . . . It is admitted that Mr. David Himrod, late of Youngstown, produced the first metal with raw coal, about the close of the year 1845, and has continued to use it ever since. The friends of Wilkinson & Co. claim that it was an accident, and a necessity, while their works were built and intended for raw coal." ("Youngstown Past and Present," printed 1875.)

It required much agitation, extending over a number of years, as well as the influence of many mine disasters, before legislation was enacted providing for State supervision of the coal mines. A bill was introduced in the legislature in 1858 which provided for such supervision over the mines in Schuylkill county, but it was not favored and was soon withdrawn. Again it was introduced in 1866, when it passed the lower House, but failed in the Senate. It was finally passed in 1869, but the law-makers were so short-sighted as to make the provisions of the bill apply to only the anthracite mines. A few years later the Governor appointed a commission of three practical miners, in accordance with a resolution of the legislature, and this commission made an exhaustive examination of the bituminous mines and reported to the Governor, recommending the extension of the provisions of the mining law to all of the coal mines of the State. This purpose was effected, and the bituminous field was divided into three districts, with mine inspectors for each.

The Bureau of Internal Affairs of the State was organized on the first Tuesday of May, 1874, and for more than a quarter of a century since has been of immense benefit through its elaborate reports upon natural products, manufactures, etc. The report of the bureau for 1874-5 gives the total product of bituminous coal as 1,289,594 tons. Five years later, in 1880, the quantity had increased to 8,327,561 tons. As the quantity mined increased and the mining area extended it became necessary to increase the number of districts. In 1890 there were eight districts, their boundaries including territory in the following counties: First district—Allegheny, Fayette, Greene, Washington and Westmoreland counties. Second district—Allegheny and Westmoreland. Third district—Armstrong, Butler, Clarion, Indiana, Jefferson, Lawrence, Mercer and Westmoreland counties. Fourth district—McKean, Potter, Tioga, Bradford, Sullivan, Lycoming, Clinton, Cameron, Elk, and parts of Jefferson, Clearfield and Centre counties. Fifth district—Fayette and Somerset counties. Sixth district—Blair, Cambria, Clearfield, Jefferson and Westmoreland. Seventh district—Allegheny, Washington and Westmoreland. Eighth district—Bradford, Centre, Clearfield and Huntingdon counties. By the year 1900 two districts had been added to this number, making ten, and at the present time a still further addition has increased the number to twelve.

In 1890 the production of bituminous coal in the State had increased to 40,740,521 tons, and this immense quantity was nearly doubled in the next ten years, the amount mined in 1901 being 80,914,226 tons. There was only one year in this last decade when the quantity decreased; this was 1893, when 43,422,498 tons were produced, against 46,225,552 tons the previous year. During the decade under consideration the annual production of coke has been as follows: 1892, 7,854,620 tons; 1893, 5,459,297; 1894, 5,724,244; 1895, 8,922,380; 1896, 6,613,253; 1897, 8,523,291; 1898, 10,171,920; 1899, 12,192,570; 1900, 12,185,112; 1901, 12,125,156. It is of interest to note that of the 24,000,000 tons of bituminous coal produced in this State in 1884, Allegheny, Washington, Fayette, and Westmoreland counties supplied 13,000,000 tons, or 54 per cent. of the product of the whole State. About one-third of this latter named quantity was made into coke.

In the early years of the bituminous mining industry there was far greater fluctuation in prices from time to time than in later years, and those prices were directly affected by prevailing rates of tariff. In 1834 the average price of the coal was $4.84. The duty was reduced to 20 per cent. in 1839-40 and the price of coal at once rose as the duty decreased. In 1842 the highest duty ever imposed on foreign coal was levied—$1.75 per ton—and the price at once went down in 1843 to $3.27. During the succeeding ten years, under more regular and reasonable duties, prices were more nearly stationary and there was greater prosperity in the mining industry. But in 1854 foreign coal was admitted free and prices at once rose, and were only reduced by the financial stress of 1857. In 1866 the duty was made $1.25, and prices fell again. These relations between the price of coal here and the rate of tariff need not be followed further.

The subject of the amount of available bituminous coal and the probable duration of the supply under the normal yearly increase of mining is an important one and has caused much discussion. A paper on the subject, "Available Coal," was prepared and read in 1880 by Dr. H. M. Chance, in which he gave some interesting figures and observations. The commonly estimated area of the coal field (between 12,000 and 13,000 square miles) greatly exceeded his estimate; also, the estimates by others of the tonnage of available coal as from 180,000,000,000 tons to 300,000,000,000 tons, are vastly higher than those arrived at by him. He ignored seams of less than two feet in thickness, and his estimate of available coal, excluding the Broad Top field, was 33,547,200,000 tons, which he divided thus: Beds over six feet thick, 10,957,200,000 tons; three to six feet thick, 19,586,800,000 tons; two to three feet thick, 3,003,200,000 tons. From the year 1864 to 1880 he placed the yearly average increase of production at six per cent. He concluded that the output would not ever reach more than 50,000,000 tons, at which rate it would require 500 years to exhaust the supply.

According to this authority, statistics showing company tonnage develop the fact that each company has an average of four or five accessible seams of commercial importance: Two companies have nine seams; two have eight seams; four have seven seams; two have six seams; two have five seams; seven have two seams, and three have one seam. In the importance of these seams as a source of supply, Fayette county stands at the head, followed by Washington, Greene, Allegheny, Westmoreland, Indiana, Jefferson, Armstrong, Somerset, Cambria, Butler, Clearfield, etc. This order has no reference to their present importance. The amount of coal excluded from the above estimates through poor quality, depth under water level or rocks, is admitted by the writer to be very great.

Since the zenith of bituminous coal production in the State was reached in 1883 in the Pittsburg region, the quantity produced has been reduced some 20,000,000 tons annually, through the extensive consumption of natural gas in Pittsburg and its near vicinity. In 1886 this gas was in use there by 3,000 families, 34 iron and steel mills, 60 glass factories, and 300 smaller manufactories, hotels, etc., all of which were supplied by one company which was organized in Philadelphia. The number of consumers was greatly increased in succeeding years through the supply from other companies of less importance.

PETROLEUM

The production and various phases of manufacture of petroleum (as it is now generally called) occupy a position among the foremost of the great industries of Pennsylvania, and their history is replete with facts of startling interest and significance. No romance ever written surpasses it in its marvellous details.

The discovery made far back in past years that this fluid flowed naturally from the earth in western Pennsylvania, and the fact that the substance was known in some parts of the world centuries earlier, while most important in themselves, do not possess a tithe of the interest that surrounds the early development of its production in this State and the discovery of its valuable constituents, made in comparatively recent times.

Oil that was doubtless petroleum was mentioned by Marco Polo in the year 1260 during his travels of that and succeeding years. He wrote that on the north of Armenia the Greater "a fountain is found from which a liquor like oil flows." At another place was found a fountain "whence rises oil in such abundance that a hundred ships might be at once loaded with it. It is not good for eating, but very fit for fuel, for anointing the camels in maladies for the skin, and for other purposes." Previous to the actual beginning of the oil industry in this country the substance had been known for two hundred years to both Indians and settlers, by whom it had been gathered from the surface of springs and small streams by absorbing it in blankets and otherwise, to be used as a remedial liniment. Coming down to more recent times, after the oil had to a small extent been introduced in its crude condition into the eastern States as a remedy for disease, Professor Silliman, in 1833, recorded the following: "I cannot learn that any considerable part of the large quantity of petroleum used in the eastern States under the name of Seneca oil comes from the spring now described [near the county line of Cattaraugus and Allegany counties, N. Y.]. I am assured that its source is about 100 miles from Pittsburg on the Oil Creek, which empties into the Allegheny river, in the township and county of Venango. It exists there in great abundance, and rises in purity to the surface of the water."

With reference to the oil deposits in western Pennsylvania, from the geologist's point of view, it may be said that the carbon in the depths of those regions, which is the base of the oil, shows that those deposits were either animal or vegetable, it being the base of the animal and vegetable world. The drill does not reach these, as they lie under the edge of the great secondary formation at a depth of 30,000 or 40,000 feet. The heat at those depths is very great. It would seem that the deposits of animal or vegetable matter are thrown off into the upper rocks as gas, and there condensed by the lower temperature into the liquid oil. Into what rock the gas will enter depends on the character of the rock. A close slate or sandstone will resist it, but wherever there is a crevice or a porous rock, it will force its way in and condense. Hence, the rock is a guide to the driller, and the location of the oil producing areas resolves itself into the existence of this porous sand rock. These areas are only small spots in the great belt of the formation and are indiscriminately scattered. Great geologists have differed somewhat upon the character of petroleum. Dana wrote: "A bituminous liquid resulting from the decomposition of marine or land plants, and perhaps also of some non-nitrogenous animal tissues." Denton thus describes it: "It is a coral oil, not formed from the bodies of the coral poplyps, as some have supposed, but secreted by them from the impure waters, principally, though not exclusively, of the Devonian times." Winchell says: "Crude petroleum is not a product of definite composition. It seems to be a varying mixture of several hydrocarbons . . . . and contains varying quantities of aluminous matter and other impurities."

The mere presence of petroleum in a geological formation is not always evidence of the existence there of a large quantity; it occurs in all stratified rocks of all ages from the Laurentian to the recent. Almost all geological authorities credit it to organic remains, differing somewhat as to whether animal or vegetable remains were the source of the greater part. They, however, generally agree that most of it found in the pores of fossiliferous limestone was produced by animal bodies, while that found in shales had a vegetable origin, the oil of commerce coming chiefly from the latter. (See "History of Petroleum," by J. T. Henry.)

The commercial production of petroleum in this country was preceded by the distillation on an extensive scale of oil directly from coal. The first of this product made and placed on sale was by the United States Chemical Manufacturing Company, Philbrick & Atwood, at Waltham, Mass., early in 1852. They called it "Coup" oil, the name having reference to the historical coup of Napoleon III., some time previous to that year. Their product was a lubricator and gained favor among users of machinery. In 1856 coal oil was made in South Boston for Samuel Downer, by Joshua Merrill, a practical oil manufacturer. The first illuminating oil of this character was made in 1856, from Trinidad asphalt. In the following year the so-called Albert coal of New Brunswick was quite extensively used in South Boston in making both lubricating and illuminating hydro-carbon oils, and a large business was subsequently built up.

Meanwhile, a bottle of the so-called "Seneca oil" of western Pennsylvania was taken to the professor of chemistry in Dartmouth college in 1854, where it fell into the hands of George H. Bissell, a graduate of that institution, who had been in the South a number of years and had come north to recruit his health. S. M. Kier had "struck oil" while drilling for salt water at Tarentum, Pa., in 1847, and pumped it up with the brine. He placed it on sale in the east in bottles as a remedy "celebrated for its wonderful curative powers. A Natural Remedy; Produced from a well in Allegheny county, Pa., four hundred feet below the earth's surface," etc. On the label of the bottle was a picture of an artesian well. The Dartmouth professor expressed his belief to Mr. Bissell that the oil in the bottle which came to the college was as good or better than the coal oils for illuminating purposes, if properly prepared. Bissell believed it, and the picture on the label seen by him a little later in the window of a drug store gave birth in his mind to the conviction that the right way to get the oil in great quantities was to bore down into the earth for it. He organized the Pennsylvania Rock Oil Company, the first of its kind in the United States, and leased the land on which were situated the principal oil springs. He sent a quantity of the oil to Professor Silliman, who analyzed it and made his report. The statement made by him that from the oil could be made as good an illuminant as any known to the world, attracted much attention. Said he in his report: "Your company have in their possession a raw material from which by simple and not expensive process they may manufacture very valuable products. It is worthy of note that my experiments prove that nearly the whole of the raw product may be manufactured without waste, and this solely by a well-directed process which is in practice one of the most simple of all chemical processes." The next step was to get the oil in paying quantities. Fortunately the company looked with favor upon Bissell's plan of drilling and pumping and in the spring of 1858 sent one of the stockholders, E. L. Drake, to Titusville, then a mere lumberman's settlement on Oil creek, about seventeen miles from where it unites with the Allegheny river. Far distant from railroads and manufactories, it required months to get the necessary tools to the scene of his operations, and more months to secure a man of experience to drill the proposed well. He began at first by digging, but found this a slow process. In February, 1859, he engaged a practical well driller at Tarentum, Pa., who was to begin his work in the following April; but he disappointed his employer and did not appear till some months later. When he did arrive they experienced considerable difficulty in removing

Edwin Laurentine Drake

The first person to successfully bore for oil in Pennsylvania; born at Greenville, New York, 1819; died at Bethlehem, Pennsylvania, 1880. Reproduced for this work from a negative by J. A. Mather the earth down to the rock, where the drilling was to begin. It was this fact that led Drake to conceive the idea of driving a tube down to the rock, thirty-six feet below the surface. This was accomplished in August and the drill was started. An average of about three feet per day was made. The last of August when the well was visited it was found nearly filled with oil, and on the following day a pump was placed in it and twenty-five barrels of oil taken out. Titusville awoke to find itself famous, and in an incredibly brief period the news spread over the country that any quantity of petroleum could be obtained in that vicinity by simply boring a well a short distance into the earth. And then began that spectacular and unparalleled rush of men into western Pennsylvania which astonished the world. Most of them were young or middle aged, adventurous and ambitious, many of them men of high intelligence, and many also whose chief motive in going there was for gambling and dissipation. Land was leased along Oil creek and elsewhere, stock companies were rapidly organized who by lease or purchase secured great tracts, and wells were put down on every hand. Several hundred barrels of petroleum were sent to Joshua Merrill, at South Boston, from the first wells and from surface production, in 1858-9, which he distilled and placed the illuminant on the market. The days of distillation from coal were numbered.

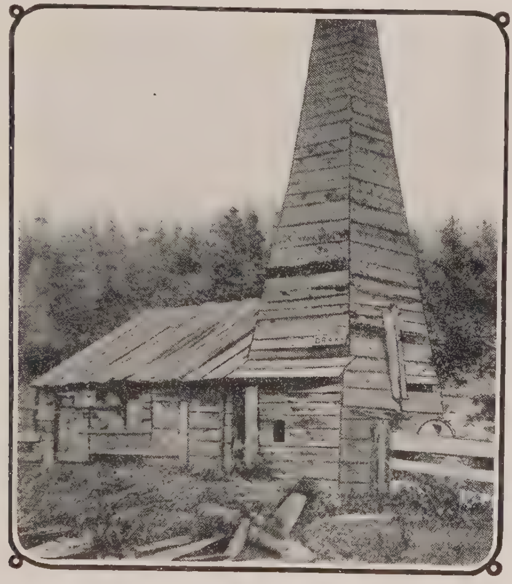
It was soon learned that pumping was not to be necessary in many of the wells. On the Archie Buchanan farm, near Rouseville, what is said to have been the first flowing well was sunk in 1860. It was not tubed and was only 200 feet deep; it soon ceased to flow. The price of oil in January, 1860, was $20 a barrel, but so enormous was the output from hundreds of flowing wells, some of them supplying several thousand barrels a day, that at the end of 1861 it had fallen to ten cents. The second productive well was sunk by Barnsdale, Meade & Rouse in November of that year, and the third for Brewer, Watson & Co., in December. One of the very early organizations in the business was the Pennsylvania

Rock Oil Co., before mentioned, of which Jonathan Watson was an officer. He was a Titusville merchant, was in the field, and promptly leased all the land he could secure along Oil Creek. His first well produced sixty gallons a minute, and oil was then selling at sixty cents a gallon. In two years from that time the farm on which this well was situated had produced 165,000 barrels of oil. The area of producing wells rapidly spread and soon Oil City sprang into existence, almost in a day, as an intensely active business center, with a population of thousands, a result that followed later at numerous other points.

With the oil output reaching hundreds of thousands of barrels per day, as it did before two years had passed after Drake's first success, the problem of storing and getting it to market became of vital importance and the task of solving it a gigantic one. The distance down Oil Creek and the Allegheny river to Pittsburg was about 130 miles. The other points where railroads could be reached were Meadville, Corry, Erie, and Union City, all far away, and accessible over only rough country roads. Barrels of every description, new and old, were gathered, filled with oil, and hauled by an army of teamsters over these roads or floated down the Allegheny to Pittsburg. The cost of this work was enormous, three or four dollars per barrel being paid in some instances for hauling ten miles. Fleets of flat boats were built along Oil creek, which, by creating artificial floods with water stored behind numerous dams, were floated to the river and so on to market. On the river a fleet of a thousand boats and thirty steamers was engaged in this work. Captain J. J. Vandergrift, a former Mississippi river navigator, came east and here saw his opportunity. He towed a cargo of barrels up the Allegheny and saw at once that if transportation in bulk could be accomplished a great saving would be effected. He built a number of boats which were made oil-tight, towed them up the river to the creek, filled them with oil and floated them down to Pittsburg, realizing immense profits. It was a foregone conclusion that the railroads would soon reach out for this freight. They carried an immense quantity of oil during the first few years of the business, especially the Pennsylvania road, which was reached at Union City, twenty-two miles away; Corry, twenty-six miles, and Erie, forty-four miles. By the beginning of 1863 the so-called Oil Creek railroad was opened between Titusville and Corry. At the same time the Erie railroad company built a line from Meadville to Franklin, on the Allegheny, and by 1865 both roads were continued to Oil City. The freight situation was thus greatly relieved; but the great task of getting the oil from the wells to the immediate shipping point still remained, and ultimately led to the construction of the first pipe line.

The plan of piping oil from the wells was not a new one and had been frequently discussed almost from the beginning, but it was not until 1864 that Samuel Van Syckel, who had "struck oil" a few miles from the railroad and found he must pay all of his profits to teamsters, laid the first pipe for conveying the product. It was a momentous event in oil history. When his pump was set at work and the oil was turned into the pipe it was found that it would do the work of 300 teams, and oil transportation, in fact, the whole business, was soon revolutionized. There was intense opposition to this and later pipe lines by the men who saw that their profitable occupation was doomed, and finally in the spring of 1866 the Governor of the State was called on to protect property and workmen of the lines. Van Syckel's first line was only four miles long, extending from Pit Hole to the railroad, but it was only a short time before others were laid to Oil Creek and other points, so that in 1873 there were nearly 2,000 miles in operation. A few of these operated by gravity.

It was inevitable under the circumstances that every acre of land in western Pennsylvania on which there was the slightest probability of drilling a producing well would be greedily leased or purchased. The business grew and spread with almost incredible rapidity. The little hamlets along Oil Creek became populous cities, and on some of the farms where there had been no settlement at all, villages sprang into existence almost in a day, and grew into active business centers in a few weeks. Pit Hole City, Rouseville, Petroleum Centre and others in Venango county, with Tidioute and Enterprise in the southern part of Warren county, all became active points of business of all kinds, their streets teeming with a throng of ambitious, eager, and excited men. Pit Hole City from a single farm house in May, 1865, became a city of 15,000 inhabitants by September of the same year, with most modern public and private institutions. The first producing well at that point gave 800 barrels per day and



Drake's First Oil Well

Depth 69 1-2 feet; average daily production for one year, 20 barrels; drilling commenced May 20, 1859; finished August 27, 1859. Engraved especially for this work from a negative made by John A. Mather, August 17, 1861 hundreds of others followed rapidly, many of them of far greater capacity. To-day the place is deserted, the supply of oil in that immediate region having first gradually diminished and then failed altogether. The same general statements may be applied to Tidioute and other points, where producing wells of large capacity were drilled soon after Drake's success on Oil creek. The usual rush of speculators, workmen, merchants, mechanics and gamblers followed. Diminishing production, the panic of 1873, and depreciation in value of property eventually left the place in stagnation. Pleasantville, Petroleum Centre, Triumph Hill, and other points became successively centers of wild excitement, the greater number of which have since settled down to quiet villages or have altogether disappeared as far as regards large business interests.

This great industry of getting petroleum out of the earth, storing it and then sending it to market, gave rise to others little less important. The principal one of these was that of refining the crude oil. At the works of Samuel Downer, of Boston, a very large and prosperous business was in progress in the distillation of coal oil at the time the first wells were opened in western Pennsylvania. He was associated in the work with Joshua Merrill, before mentioned. It needed no special foresight to enable those men to realize that a product was at hand that would soon displace coal as a source of oil for illumination. They promptly accepted the situation, visited the oil region, and in 1862 built a refinery at Corry at a cost of $250,000, where a vast business was carried on. They meanwhile sent crude oil to the Boston works, where great quantities were refined.

Extension of the boundaries of the oil producing region was only a part of the natural evolution of the industry. Most of the land in the near vicinity of the great oil centers was soon a veritable thicket of derricks, and prospectors were perforce driven farther away in quest of the buried treasure. The first belief that producing wells could be drilled only in valleys had been proven a fallacy, and at the same time it had been learned that, while oil might be found in the "first sand," from which Drake obtained his supply at a depth of seventy feet, it also existed, and frequently in such quantities and under such pressure that wells would spout forth thousands of barrels in a day, in second, third or fourth sands, from far greater depths. These facts could have but one tendency—to immensely increase the number of experimental wells, as well as their average depth; and the greater the number of wells drilled, the greater the number of those that were merely "dry holes," as they were termed, or else produced in such limited quantities as to be unprofitable. During the first ten years of the industry, something over 5,000 wells were drilled, and only a little more than one-fifth of these were profitable producers. It was a hazardous lottery, but the men were always at hand to take the chances.

Another important feature of the oil industry was the creation of an army of buyers and brokers, who represented the large refiners. They visited all of the important wells and purchased the product, relieving the owner of the well of all of his difficulties and expense in transportation. These men ultimately established oil exchanges at Oil City in 1869, and Titusville in 1871; there had been one in New York city as early as 1866. Meanwhile the refining industry grew with increased production until in 1872 the capacity of the refineries in the oil region had reached about 10,000 barrels. It was then confidently predicted and hoped that this great industry would ultimately be wholly confined to this region, where the producers claimed it belonged. This sentiment was destined in the course of time to lead to serious trouble.

In the speculative fever that attended the oil business in all of its phases it is not surprising that prices of the product fluctuated between wide extremes and often at very brief notice. In 1859 crude oil brought about $10 a barrel, a figure that was again approximated in 1864, while a year or two earlier it was scarcely worth a dollar per barrel, and at one time in 1863 it was sold as low as ten cents per barrel. These great fluctuations during a long period from year to year, are given in the accompanying figures. No other mineral product of the United States ever sold at such widely differing prices in so brief a period. The principal causes of this fluctuation were the abnormal conditions in the Civil war period, the increase of gross production, the effects of the Franco-Prussian war of 1870, and government reports of the development of foreign oil fields. To these were added about 1870 the beginning of a practice of discrimination in freight rates by the three trunk railroads that were competing for the oil carrying business, a practice that ultimately led to an unparalleled business conflict.

General view of Pithole, 1865

Negative by John A. Mather

The yearly average prices of pipe-line certificates of crude oil at the wells from 1860 to 1897 are as follows: 1860, $9.59; 1861, 49c.; 1862, $1.05; 1863, $3.15; 1864, $8.06; 1865, $6.59; 1866,

$3.74; 1867, $2.41; 1868, $3.62½; 1869, $5.63¾; 1870, $3.86; 1871, $4.34; 1872, $3.64; 1873, $1.83; 1874, $1.17; 1875, $1.35; 1876; $2.56¼; 1877, $2.42; 1878, $1.19; 1879, 85⅞c.; 1880, 94½c.; 1881, 85⅞c.; 1882, 78⅛c.; 1883, $1.05¾; 1884, 83½c.; 1885, 87⅞c.; 1886, 71¼c.; 1887, 66¾c.; 1888, 87⅝c.; 1889, 94⅛c.; 1890, 86¾c.; 1891, 67c.; 1892, 55⅝c.; 1893, 64c.; 1894, 83⅞c.; 1895, $1.35⅞; 1896, $1.17⅞; 1897, 78⅝c.

General view of Pithole, August, 1895

This view is the same as the original made in 1865. Negative by John A. Mather

During a number of years of this industry "the prices of certificate oil," that term meaning the oil taken as standard and merchantable by the pipe lines, ruled the market or selling price of crude petroleum. These certificates were bought and sold on the floor of the oil exchanges. In past years there was a large amount of oil held as stocks, and as these were depleted it was necessary for the pipe line companies to recall a large number of these certificates. As the stocks were reduced, it came to pass that a comparatively small amount of oil would control the entire trade. On January 23, 1895, the following notice was posted at the various offices of what was known as the Seep Purchasing

Agency, Mr. Joseph Seep being the purchaser for the Standard Oil Company: "From this date the prices quoted are not those of certificate oil, but the prices paid by the Seep Purchasing Agency." ("Production of Petroleum in 1897," Oliphant.) The quotations made in the Oil City Exchange, at various times, show that there was considerable difference between the prices paid for certificates and those paid by the Seep Agency.

The export of refined oil in 1870 was 4,501,983 barrels. In 1874 it had risen to 7,315,406 barrels. The export of crude in 1870 was 329,218 barrels, and of naphtha, 7,668,924 gallons. In 1874, the export of crude was 334,035 barrels, and of naphtha, 9,565,566 gallons. In 1880, the gross production amounted to 27,334,199 barrels.

The following report on the several districts in the year 1885 gives further interesting details of the business:

The Allegheny district contained an area of thirty-one square miles and had produced up to that time 15,000,000 barrels of oil.

The Bradford district, which included the central and northern parts of McKean county, Pa., and southern Cattaraugus county, N. Y., containing 133 square miles, of which 121 were in the Bradford district proper, had produced 109,000,000 barrels. The sand in this region is gray, black, or dark brown in color.

The Warren district includes an area of thirty-five square miles, taking in the eastern part of Warren county and the northeast part of Forest county. The oil comes from sands of varying geological horizons, having somewhat the appearance of the Bradford and the Allegheny sands, the depth of the oil sands below the Olean Conglomerate varying from 1,100 to 1,850 feet. All of the Bradford and Warren district sands are believed to be of the Chemung Devonian age. The Warren district produced up to 1885 12,000,000 barrels of oil.

The Venango district was the scene of nearly all of the early developments and includes forty distinct pools between Oil City on the south and Pleasantville on the north; it includes an area of twenty-eight square miles. The oil was obtained from the first, second, and third principal sand beds, contained within an interval of 350 feet. The first one was about 450 feet below the Olean Conglomerate. The Venango sands belong to the Catskill (Devonian) formation; they are white, gray, or yellow pebble rock, not so homogeneous as in the Allegheny and Bradford districts, and consequently there was always greater probability of drilling non-producing wells. The Venango district produced to 1885, 55,000,000 barrels of oil.

The Butler district includes pools in Butler and Clarion counties and the southeast part of Venango county, with an area of eighty-four square miles, seventy-six of which are in Butler, Clarion, and Armstrong fields and the Butler cross belt. It has the same group of sands as the Venango district and produced up to 1885, 69,000 barrels.

The Beaver district included the two principal pools at Slippery Rock and Smith's Ferry, the former and that part of the latter situated east of the Pennsylvania line containing sixteen square miles. In both a heavy oil was obtained from the representative of the Pottsville Conglomerate, and an amber oil from the Berea Grit in the sub-carboniferous series. The production up to 1885 was about 1,000,000 barrels.

Of the oil districts as defined at the present time it may be stated that the Bradford district produced in 1897 3,904,230 barrels. It is estimated that the total production of this field outside of Pennsylvania is equal to about 13 per cent. of the entire production of the Bradford field, making 507,549 barrels produced in the outside portion of the field in that year.

The Warren and Forest county district as now defined includes southwestern McKean county, eastern and southeastern Warren county, northwestern Elk county, and northeastern Forest county; it has been sub-divided into the Tiona pool, Warren and Clarendon pool, and the Middle pool or district. The production for 1897 was 1,999,108 barrels.

The Lower district includes the southwestern part of Warren county, all of Venango county, the eastern part of Forest county, and all of Clarion, Armstrong, and Butler counties. The production for 1897 was 6,825,599 barrels.

The Allegheny district has been made a separate district and the production in 1897 was 2,958,540 barrels. This district shows a larger proportional decrease during the preceding year than any other district.

Washington county is also now considered a separate district and produced in 1897, 2,175,712 barrels. Beaver county is now another separate district and produced in 1897, 317,926 barrels.

Franklin district includes an area lying between the Allegheny river and French creek at Franklin, Venango county, in which is produced a natural lubricating oil, which is extensively used by the railroads of the country. The production in 1897 was 48,880 barrels, and during a number of years past the product has averaged about 50,000 barrels.

Green county district shows comparatively small production, although a few excellent wells were drilled in 1897, and several large gas wells were developed in the southern part of the county in the year named.

Outside of these districts oil was found in isolated pools south and southeast of the Beaver and Butler districts; at Mt. Nebo, near Pittsburg; in the vicinity of Pleasant Unity, Westmoreland county; near the mouth of Dunlap creek, Fayette county, and near Washington in Washington county.

Regarding the sources of petroleum and the probability of exhaustion of the supply, Professor Lesley wrote in 1883: "It is certain that petroleum is not now being produced in the Devonian rocks by distillation or otherwise. What has been stored up can be got out. When the reservoirs are exhausted, there will be an end of it. The discovery of a few more pools of two or three million barrels each can make little difference in the general result." Other excellent authorities of that time accepted the same view, and it was not until about that year that the probable diminution and final exhaustion of the oil supply in any given locality, and the revolutionizing consequences of such a result, were fully appreciated. But when the maximum production for any one month (105,102 barrels) was reached in July, 1882, and a long and steady decline in quantity began and continued, the most optimistic believers in a supply that would continue indefinitely were convinced of their error. In his work on "The Product and Exhaustion of the Oil Region of Pennsylvania and New York," (1885), Charles A. Ashburner wrote: "A defined territory, a product inadequate to meet the demand of the market for the past eighteen months, a growing market and rapidly diminishing stocks; an increasing number of drilling and producing wells, and a rapidly falling daily average product per well, are all significant signs of a certain decline in a great industry."

The Drake Monument

Erected in memory of Colonel E. L. Drake, at Titusville; dedicated, 1901. Negative by John A. Mather

These statements, startling as they were at that time, have all been verified as far as relates to the producing territory then discovered and developed. Where once hundreds of thousands of active men eagerly toiled in one or another branch of the oil industry in western Pennsylvania, and the hills and valleys were covered with forests of derricks in thousands of which the sound of the pumps never ceased; where busy marts of business, many of which were the creation of a wonderfully brief period, called out the energies of their ambitious residents, all is now stagnation, as far as this great industry is concerned.

It was estimated in July, 1883, that there were 17,100 producing wells in the oil region under consideration. In July, 1884, there were 21,844, and in July, 1885, 22,524. The average price of crude oil in July, 1885, was 92½ cents per barrel, which was 13¼ cents less than the average for the whole of the year 1883. Down to and including the year 1882 the total product was 154,000,000 barrels, which quantity was increased at the beginning of 1885 to 261,000,000 barrels. During the succeeding years to the present time the oil producing districts of this country, as well as in other parts of the world, have been increased to a marvellous degree, until it would seem that notwithstanding the well-proven fact that the supply in any given locality must inevitably decline, the gross product may never fall below the needs of humanity.

The unjustifiable discrimination in freight rates on oil by the railroads, to which allusion has been made, and which began prior to 1870, led to a memorable conflict between the producers and refiners in the oil regions on the one side and the combination of the great refining interests of Cleveland with the railroads on the other. Through the organization then known as the South Improvement Company, which became the present great Standard Oil Company, by John D. Rockefeller and his colleagues, they were given freight rates over the railroads that threatened to ruin every producer and refiner who declined to merge his interests with theirs. In 1870 Cleveland was the most important refining center in the United States, taking one-third of the entire output of crude oil from the oil regions. Competition between the refiners of that city and those situated near the source of supply was intensely active; but notwithstanding the apparent advantages of the latter, they found their interests declining and their profits dwindling, while the rival organization was evidently on the high tide of success. The mysterious cause of this condition of affairs was finally discovered and retaliation on the part of the oil men in Pennsylvania was prompt and effective. The railroads had their excuse for giving the Cleveland men a lower freight rate than they would grant the refiners of the oil region, in the fact that the former guaranteed to give the roads a vastly greater volume of business. Many refiners were warily led to believe that if they did not join the great organization they would be financially crushed—an argument that was effective in many instances. To still further strengthen the lever with which the combination was attempting to rule or overthrow the business of the independent operators, it was announced early in 1872 that a heavy advance in freight rates would be made on oil from the oil region, from which their opponents were to be exempt. When this statement was read in the newspapers the Pennsylvania oil centers were thrown into an angry panic, and within twenty-four hours a great mass meeting was held in Titusville and a little later was followed by another in Oil City. These excited gatherings resulted in the organization of the Petroleum Producers' Union, which at once resolved that no new wells should be started by its members within sixty days and that no oil whatever should be sold to their opponents. They denounced the whole business as a conspiracy; ordered its history printed and sent in many thousands to United States and State officials, and to many railroad and business men in all parts of the country. A monster petition was sent to the State legislature asking for a free pipe line bill, and during a number of weeks ordinary business was to a large extent abandoned. The efforts of these determined men of the oil region to break down the combination of railroads and Cleveland refiners were finally effective, and in March, 1872, the railroad companies annulled their contracts with the South Improvement Company. It was soon discovered, however, that the Standard Oil Company was only another name for the South Improvement Company, and that its power and influence with the railroads was almost compulsory. By observing the utmost secrecy, rebates were again secured and the old difficulties sprang into life again to hamper operations and diminish profits of the oil interest in this State. Mr. Rockefeller and some of his business associates visited the oil regions and there used their persuasive powers to the utmost in efforts to bring the whole refining interest under control of their company. They met with some measure of success and gradually since that time the great Standard Oil Company has reached out its tentacles into all the oil producing sections of the country and substantially gained an ascendency which no opposition has yet been able to overcome. Its recent history is too well known to need repetition here. Whether its operations have inured to the good or the ill of the country at large, it stands as one of the most gigantic business monopolies the world has ever seen.

NATURAL GAS

In this connection, and because of its close association with the oil interests of this State, brief reference to the production of what is generally known as natural gas will possess a measure of value and interest. The existence of what were called gas springs was known to settlers in some localities many years ago, the first probably near Fredonia, N. Y. But it was not until after 1821 that any attempt was made to utilize the product; burners were then put in use, and the gas was confined and directed through them for illuminating purposes. In 1858 a well was put down which supplied gas for 200 burners; another followed in 1871.

In a geological sense the oil and the gas regions are one and the same. The strata drilled through in sinking the great gas wells near Pittsburg are in general the same as the strata in different parts of the Devonian and Carboniferous series which have been so extensively pierced for the production of petroleum. The rocks which supply gas are found in a vertical range of about 3,000 feet of Carboniferous and Devonian strata extending from the Mahoning sandstone at the base of the Lower Barren measures, which is an average of 500 feet below the Pittsburg coal bed, down to the Smethport oil sand in McKean county, which is 350 feet below the great Bradford oil sand of that region. The principal gas horizons are (1) the probable representative of the Venango first oil sand at Pittsburg, 1,800 to 1,850 feet below the Pittsburg coal bed; (2) the Sheffield gas sand, which appears to be the lowest oil and gas sand in Warren county (the horizon of which is about 800 feet above the bottom of the interval of 3,000 feet); (3) the Bradford oil sand, 1,775 feet below the base of the Pottsville Conglomerate. It should be understood, however, that gas has been found outside of these three horizons.

Carburetted hydrogen is the chief component of gas from the earth, which is generally traced to bituminous matter, from which it may also be distilled, as is practiced in producing it from coal. The oil wells in very many instances and places produced this gas—some of them nothing else and in enormous quantities. But as far as relates to the oil region under consideration in this chapter, the gas was long considered a useless and dangerous product. About the year 1870 it began to be utilized in various localities and from that time forward many wells were drilled exclusively for it. On the upper Cumberland river, in Kentucky, gas accumulated in such quantities beneath the sheets of Lower Silurian limestone, and the pressure was so great, that hundreds of tons of material were sometimes blown up out of the earth by its volume, giving such places the local name of "gas volcanoes." Along the Ohio river gas frequently escaped in large volume from oil wells, and wells bored there in 1866 at the same geological horizon that produced oil at Oil creek, struck fissures at 600 feet depth from which gas shot up with enormous pressure, blowing the drilling tools far into the air, accompanied by a jet of water that rose 100 feet from the earth. The water in such wells was excluded by the insertion of a tube and the gas was thus separated and confined within itself. Its value as a heat producer finally attracted the attention of large manufacturers, pipe lines were laid in many localities and it became a very important factor in large industries and for domestic heating purposes. It so continues to the present time, though its diminution and gradual extinction in given localities corresponds in that respect with oil. In the case of flowing oil wells it is the theory that the oil is forced upward by the great gas pressure; when the latter diminishes the flow decreases in corresponding ratio. A remarkable gas well was drilled at East Sandy in 1869, in which the flow caught fire and burned during more than a year, the roar of the flame being heard for miles. After its partial exhaustion the well was piped and the gas was used for producing steam power for drilling, pumping, etc. A large number of gas wells were drilled in the early years of the industry at Gas City, Cranberry township, Venango county, and the area from which it was profitably drawn gradually spread to many other localities. In June, 1872, a well was drilled for oil two miles from Fairview, Butler county, Pa., to a depth of 1,335 feet, when it was abandoned on account of the flow of water and gas. A few months later the pressure of the gas became so strong that it forced all the water from the well and in the fall of that year a company was formed to utilize the product. A pipe 3¾ inches in diameter was laid to Fairview, and later was continued three miles farther to Petrolia, and under a pressure of eighty pounds to the square inch the gas was extensively used for both light and heat.

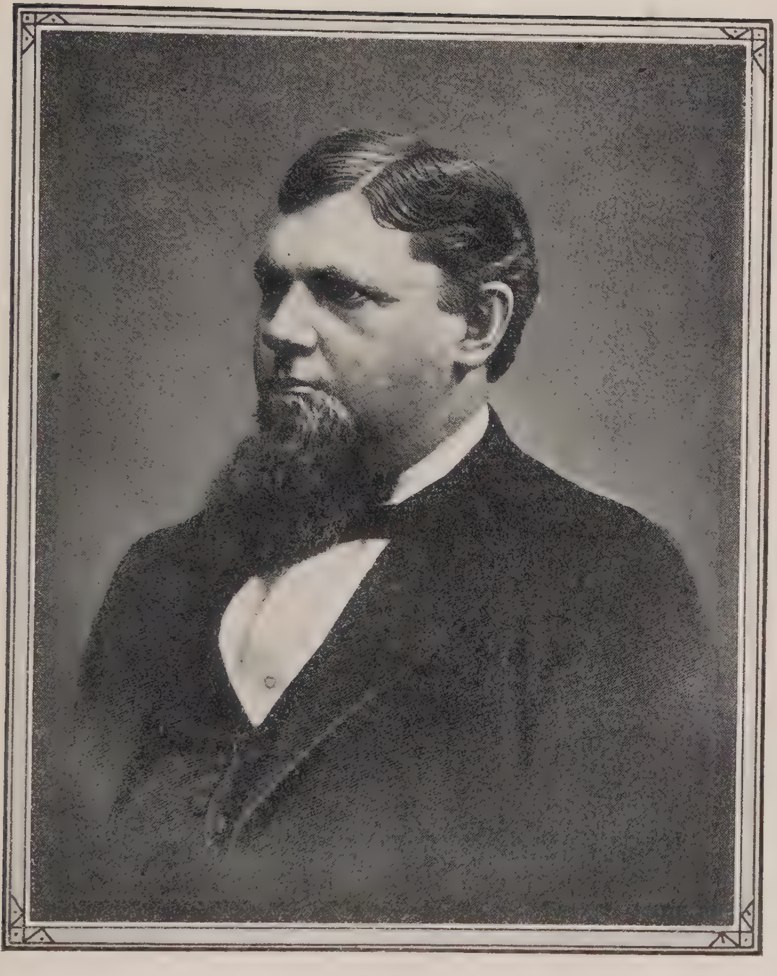
In the Newton well, about five miles northeast of Titusville, gas was struck at a depth of 786 feet, which escaped with such tremendous force as to blow out a sand pump and tools, with great volumes of water, to a height of 100 feet in the air. The roar of the escaping gas was heard ten miles distant. The total pressure was about 350 pounds to the inch and 500,000 cubic feet of gas escaped per day. Capitalists made plans for utilizing the product at Titusville, and the well was purchased by Henry Hinckley, of that place. On the 1st of August, 1872, it was conveyed to the city in a two-inch pipe, which was later superseded by a 3½-inch main, and was long extensively used in the place and by surrounding farmers and manufacturers. In later years the total gas supply was enormously increased, both in Pennsylvania and elsewhere, and it was conveyed to Pittsburg, Buffalo, and many other large and small business centers, where it was almost universally used in manufacturing operations of every description, and in public buildings and dwellings for heat and light. In 1873 there were twenty-five wells in operation in this State, the greater part of which were drilled especially for gas, which was reached at depths varying from 500 to 700 feet. Unlike oil, natural gas cannot be commercially transported to points far distant from the supply, excepting in pipes; hence, when the supply diminishes and finally ceases in any given district, that district must seek its light and heat from other sources. This has been the result in many localities where brilliant anticipations were once entertained that the supply would continue indefinitely.

CEMENT

Among the valuable natural products of Pennsylvania that have aided in giving the State prominence in industrial operations are the rocks that supply the requisite materials for the manufacture of what is commonly known in this country and in Europe as Portland cement. These materials, although they are widely distributed in various parts of the world, are not, in very numerous localities, found in such juxtaposition or even proximity as to justify attempts to make profitable use of them in producing commercial cement.

There is a widely existing misapprehension as to the antiquity of true cement. Much has been said and written of the old Roman cement which has bound together great blocks of masonry, withstanding the wear of time and the disintegrating effects of weather. It is now known by those who are well versed on the subject that this binding material used by those ancient builders was nothing more than a judicious mixture of slacked lime and a peculiar powder or sand made by crushing the volcanic deposits of Italy, producing a mortar that would after considerable time set firmly under water. By reason of the silicious character of this sand, the mortar possessed this "setting" property and also became in time a substance of great strength and durability. But it was, after all, only a form of our old lime and sand mortar, and it did not always endure. Pliny, in writing of his experiences in old Rome, mentions buildings which had fallen, and frequently through the weakness of the binding materials used in the masonry.

There was little improvement in the character of mortar used before the middle of the fifteenth century. Stone and brick constructions still had to be repointed with new mortar every few years, and chimneys not infrequently rebuilt. Even at the time mentioned the new discovery claimed to have been made by a Frenchman was not of great value. His petition to the king was based upon his alleged discovery that the way to make the perfect mortar was to take the lime hot from the kiln and at once incorporate it with sand and water, instead of letting the lime and sand slake together for months, as was the old practice. Nothing practical came of this discovery, and so it was not until about the beginning of the last century that the first real progress was made. Then the great Smeaton, builder of the famous Eddystone lighthouse, facing the problem of erecting his massive foundations deep under water, made the discovery of hydraulic cement, or



Henry Martyn Hoyt

Teacher; soldier in Civil War and mustered out with rank of brigadier-general; additional law judge courts of Luzerne County, 1867; governor, 1879-1883

hydraulic limestone mortar. During his numerous experiments he learned that the theory of the ancients that the harder the limestone burned, the harder the cement, was incorrect. He found that the softer stones, those that contained a fair amount of argillaceous substances, or clay, gave better results, and he established the principle that a limestone containing one-fifth to one-fourth residue when dissolved in hydrochloric acid, would set under water. To such stones he gave the title of hydraulic limestones, and from the principle laid down by him come the two great definitions of what are now known as the "natural," and the artificial (Portland) cements of commerce. Smeaton was not a financial gainer through his discovery, and in 1796 James Parker of Christ Church, Surrey county, England, invented and patented a cement to which he gave the title "Roman," claiming it was identical with the one used by the ancients. He marketed his product to a considerable extent. At the same time experiments were progressing along similar lines, but it was not until 1812 that a number of men of that country, after long research, probed the secret of making hydraulic mortar, and actually made in an artificial way a cement similar to the well-known Portland cement.

In 1813 Joseph Aspdin, a bricklayer of Leeds, England, took out a patent for a cement, the details of which closely follow the later processes of manufacture, and gave his product the name Portland cement, on account of its resemblance when set to the Portland stone, a well known building material of England. This cement he placed on the market in opposition to the Roman cement of Parker and competition was active many years. Other successful cement works were established in England in later years. The question of the relative value of the Portland and the artificial cements was finally settled some time after 1850, by John Grant, the engineer in charge of the London drainage system. He conclusively showed that Portland cement, with three parts sand, was as strong as Roman cement with one part sand. This declaration gave a great impetus to the manufacture of the cement.

In this country the cement industry was called into being largely by the building of the early artificial waterways. When the necessity for its use arose, limestones were discovered which, according to the theories of Smeaton and others, developed the qualities necessary for making a good hydraulic cement. So, here as well as in England, the natural cement industry preceded the manufacture of the Portland cement. Between the years 1830 and 1860 cement works were established on the line of the Richmond and Allegheny canal at Balcony Falls; on the Ohio river canal at Louisville; on the Chesapeake and Ohio canal at Cumberland and Hancock, Md.; on the Erie canal at Howe's Cave; on the line of the Lehigh canal at Siegfried's Bridge, Pa., etc.

The Portland cement was imported from England in a small way in 1870, and its excellence in every essential characteristic soon brought it into extensive use. The natural result of this business was an attempt to produce the same article in this country. About 1870 and a little later David O. Saylor, of Allentown, Pa., was operating a small natural cement works on the line of the Lehigh canal, at Coplay, Lehigh county, Pa. Experiments made by him proved that by burning to incipient vitrification the natural rocks in his quarry, he could make a cement that would, for a short period, stand a tensile strain equal to the imported Portland article. But he learned, also, that if it was left for a time in briquettes or in constructed work, it would crumble away, and that this defect was caused by the variation in the raw rocks used. By his native ability and perseverance he then studied and successfully applied to the Lehigh rocks the principle that had governed the production of the imported Portland cement, though he was dealing with a material never before used for this purpose. Some later figures of the present production of this indispensable article in the United States and its immense value to the builders of the country will convey an idea of the vast importance of Mr. Saylor's work. He found that it was necessary to grind the raw rocks together to produce a material of uniform analysis and then to make this material into blocks of homogeneous character before placing them in the kilns for calcination. Mr. Saylor was materially aided by John W. Eckert, a graduate of the Lehigh University, who was the first chemist of the Coplay Cement Company. This company Mr. Saylor afterwards left to join the American Cement Company, which had been established by Robert W. Lesley, who had also been connected with Mr. Saylor.

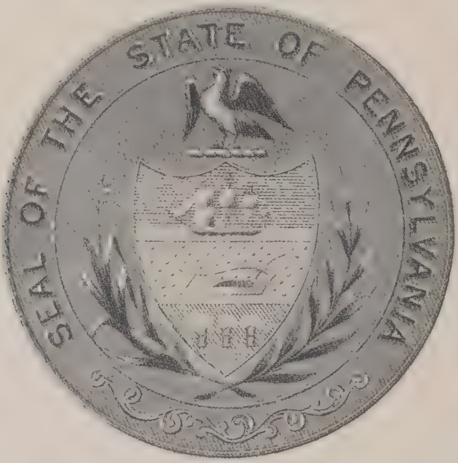
While this work in the Lehigh region was being carried on to success, experiments and young industries were in progress elsewhere in this State. Early in 1875 works were started by William P. Shinn and John K. Shinn at Wampum, Lawrence county, Pa., using limestone and clay. These works are now owned by the Crescent Cement Company and are on the high tide of success. Experiments in other sections of the country were not so successful, for varied reasons, and in 1881, out of the six original works established, three were failures and the outlook for the investor was not encouraging. The chief difficulty encountered was the cost of getting the raw material into powder, then into paste, then into blocks and then into the kiln. Foreign Portland cement at this time had full control of the market. About 1884-5 James M. Willcox, E. J. DeSmedt, and Robert W. Lesley took out patents for mixing liquid hydro-carbons with the paste, thus producing a material which could be compressed into balls and put at once into the kiln, saving the intermediate steps of drying, etc. These processes were based upon the use of the by-products of coal gas manufacture and were adopted in the works of the American Cement Company, at Egypt, Lehigh county, Pa. The later advance in the price of coal tar caused the abandonment of the process, but while it was in use, other inventions by Mathey, Navarro, and Ransome in the same direction gave rise to the establishment of the Atlas Portland Cement Company, which has large works in the Lehigh region, and produces great quantities of Portland cement. These processes, based originally upon the calcination of the crushed raw rock by oil in revolving kilns, were unsuccessful at first from the same causes that had given Mr. Saylor trouble in his early attempts. But improvements were made whereby the material was ground to an impalpable powder and slightly moistened before being run through the kilns. This method has proven wonderfully successful and is to-day the foundation of the great American Portland cement industry.

A clear conception of the cement industry cannot be gained without a general understanding of the inherent differences between natural cement (before mentioned) and Portland cement, and the character of the raw rocks used as regards their chemical properties, etc. Broadly speaking, the natural cement is made from an argillaceous limestone, found in either crystalline or laminated form, and which when calcined contains from 40 to 55 per cent. of lime, or lime and magnesia, and from 45 to 60 per cent. of argillaceous material—silica, alumina, and iron oxide. These stones are found in many parts of the country and cement is made from them by burning in open kilns. The effect of the burning is to drive out the carbonic acid gas and the moisture. After burning, the material is first crushed and then ground to the finest powder. This natural cement is subject to a number of variations that are beyond control of the producer: It is made from a rock which may vary from day to day in its constant ingredients; it may contain more or less moisture; its calcination in open kilns is a good deal dependent on the weather; and the low temperature at which it is burned does not produce an absolute chemical union of all the ingredients. But it may be said to be a very safe and sound building material, produced in the best way out of "natural" material, containing the ingredients which nearly approach the standard of artificial cement. In its manufacture no attempt is made to expose the material to a degree of heat sufficient to bring all the ingredients into close chemical union and activity, and there is no attempt to break down the structure of the rock or to produce a homogeneous material for calcination, other than the natural rock.

Portland cement is essentially an artificial product. It began with the combination of the chalks and clays of England, mixed in such proportions as to produce the highest grade of the article. It can be produced by properly proportioning limestones, argillaceous limestones, marls, with argillaceous limestones and forms of clays. The basic principle is that the combined material shall, after calcination, analyze from 55 to 65 per cent. in lime, and the remainder of silica, alumina, and oxide of iron. The further and all-important element is that all these materials shall be broken down into the finest powder, so that all the calcareous elements may find equally finely ground argillaceous elements with which to combine and form silicates and aluminates of lime in the chemical crucible of the kiln.

In the early days of the manufacture it was extremely difficult to overcome the widespread objection that the raw materials in America were dissimilar to those in England and that good Portland cement could not be produced here. But experience and analysis have proved that the actual character of the ingredients used is not all-important, if the final composition is kept within fairly reasonable limits. This has been fully accomplished and the results of tests of the American product soon overcame the objections at first urged against it. A good Portland cement may be made from chalk, marl, or limestone containing carbonate of lime between 80 and 100 per cent., and clay containing silica between 60 and 70 per cent. and alumina between 6 and 10 per cent., mixed in the proper proportions; or, it can be made with argillaceous limestone containing 60 to 70 per cent. of carbonate of lime, and limestone containing from 80 to 100 per cent. of carbonate of lime, the remainder being silica and alumina. Broadly speaking, from these materials Portland cement is made.

The selection of raw materials with reference to their geographical situation and their juxtaposition, convenience of fuel, and transportation facilities presents the first problem to the manufacturer. The relation of the selected materials to each other, whether soft or crystalline, constitutes another problem for solution, which is of the greatest importance; but these two problems solved, the success of manufacture then depends only upon economical handling, calcining and grinding of the materials.



The Great Seal of the Commonwealth of Pennsylvania—obverse

In manufacturing the Portland cement what is known as the wet process was used in Europe and during many years in this country, with a number of minor variations in methods; but they were all predicated upon supplying to the flame in the kiln a properly proportioned, thoroughly pulverized and mixed material, made into forms of some kind, duly dried, and thus presenting to the flame a new rock containing all the necessary ingredients in proper mechanical union. These old methods have been greatly improved in America in many details, and especially through the use of the American dry kiln. This invention had its origin in Europe, and it proved a failure in England; but after some improvements it was perfected until now the greater part of the American cement is made by its use. Briefly, this kiln is an iron cylinder sixty feet long by six feet in diameter, which is revolved about once each minute. Into one end of this the raw material is introduced and at the other a flame drives out the moisture and carbonic acid gas and subsequently calcines the material into a clinker in the form of small lumps. This product drops out at the lower end of the kiln, is conveyed to a cooler—a high iron tower with forced draught, whence it goes to the grinding machinery. This so-called dry process effected great economy, and now more than three-fourths of the product of the country is thus made. But the use of dry raw material required heavy and costly crushing machinery, and American invention supplied it in several different forms. What is known as the Gates crusher, which had been largely used in the coal mining regions, was first adopted for the manufacture of cement in Lehigh county, Pa., and it is to-day the standard machine in all cement mills using rock as raw ma-

The Great Seal of the Commonwealth of Pennsylvania—reverse terial. So, also, in grinding machinery, most important improvements have been made by American inventors, the principal one being the Griffin mill, through the use of which the preparation of the raw material was greatly cheapened.

In view of the fact that during thirty years past Portland cement has been the chief binding material in the heaviest masonry in the world, it will be understood that great difficulty was long experienced in the introduction of the American product. In the early days of the industry, where the change from well known brands of the foreign product to the American involved a saving of only $2,000 or $3,000 on a building costing $1,000,000 or more, it was extremely difficult for the American cement to obtain a commercial foothold. But in time prejudice largely disappeared, the foreign cement was slowly crowded from the market, and our native product reached the high rank it now enjoys. Where twenty years ago the production of American Portland cement was about 85,000 barrels a year, it has rapidly and regularly increased until in 1901 it reached the enormous quantity of over 12,700,000 barrels; and this has been done without materially reducing the product of 8,000,000 to 9,000,000 barrels of natural cement which are still being annually produced. At the same time, it should be noted that since 1890 the quantity of imported cement used has shown little variation from about 2,000,000 barrels annually.

As before stated, the works of David O. Saylor, at Coplay, Lehigh county, Pa., and the plant of the Wampum Cement Company, in Lawrence county, were the first cement producers in this State. They manufactured substantially the whole of the 85,000 barrels mentioned as the product of 1882. During the early years, after the Wampum works ceased to produce in large quantities, it was the Saylor plant that was the largest contributor to the product until about 1885. The center of the Pennsylvania industry had been for years in the territory lying substantially between Phillipsburg, N. J., and Cementon and Siegfried's Bridge, in Lehigh and Northampton counties, Pa. This field includes nearly all of the largest producing works in the United States and within it are gathered nearly three-fourths of the total producing capacity of the country. In 1890 there were sixteen works in the whole country, and those situated in Lehigh county, with one near Phillipsburg, N. J., produced about 60 per cent. of all the Portland cement made in the United States; and almost continually since that year the same five works have produced 61 per cent. of the total output. In 1898 what is known as the Lehigh district produced in its eight works 72.4 per cent. of the 3,692,284 barrels made in the country; and in 1899 the eleven works in this district produced 72.7 per cent. of the total. The figures of 1901 show that out of the 12,711,225 barrels total, the Lehigh district produced 8,595,340 barrels. This district includes three works in New Jersey, and in Pennsylvania are the Northampton, Phoenix, Dexter, Nazareth, Atlas, Lawrence, Reading, Bonneville, Whitehall, Hercules, Coplay, Lehigh, Martin's Creek, and American Cement companies. Most of these companies have more than one plant. Outside of this district, and still in Pennsylvania, are the Clinton Cement Works, near Pittsburg, where slag cement is made, and the Crescent Cement Company, at Wampum, where Portland cement is made from limestone and clay.[1]

AGRICULTURE

If we take into consideration the geological formation and distribution, the general topography of Pennsylvania with its necessarily large area of mountainous and uncultivated lands, with the character of the soil in some limited districts, the State ranks high as a productive agricultural region. The character of the outcropping and underlying rocks in any given area and the influences arising from their decomposition have an important bearing upon the soil and its productiveness. The geological formation in Pennsylvania includes three principal divisions of rocks. 1. The Azoic and the Eozoic in the southeastern part, across which lies (2) the Mesozoic (the new red) in a belt twenty to thirty miles wide, extending from New Jersey into Maryland. 3. The Paleozoic series from the Potsdam sandstone to the coal measures, occupying the remainder of the State. The tertiary and upper secondary series do not extend across the Delaware river from the eastern side. A drift formation of sand and gravel covers the northern and northwestern counties, thinning away before the New York line is reached, except where it shows down the Delaware valley in the east and on the branches of the Ohio in the west. Along the middle of the northern bounds of the State the height of the table land probably prevented the formation of this deposit, while the valley beds and the lower hills of the northwestern counties are heavily covered with it.

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[1] The information upon which the foregoing account of the cement industry in Pennsylvania is prepared is drawn from the very able report to the Bureau of Industrial Statistics by Robert W. Lesley, of Philadelphia.

The gneissic rocks are limited to the southeastern counties, occupying a margin of varying width along the Delaware below Trenton, at Philadelphia reaching up the Schuylkill about ten miles, and displaced on the northwest by a narrow belt of partially metamorphosed lower Silurian limestone, which separates it from the red sandstone. This contains quarries of the white marble which has been so extensively used in Philadelphia and elsewhere for building and other purposes. Gneiss is spread over the north part of Chester county, and the Laurentian gneiss is believed to form the body of the Reading and Easton hill, and of the South mountain west of Harrisburg. Southwest from Philadelphia gneiss continues around the border of the State, the edge of the formation north of Maryland coming to a point south of Gettysburg in Adams county.

Across this gneiss region extend tracts of Serpentine rocks, forming the so-called "Serpentine barrens." In these rocks is found chrome iron ore, which has been profitably taken out at different points. The Lower Silurian formations contain great deposits of hematite iron ore, which have been extensively worked. The northern edge of the New Red sandstone ranges across the Delaware below Durham, passes westward across the Schuylkill just below Reading and the Susquehanna five miles below Harrisburg, inclining thence southward, and passes out of the State, keeping at the foot of South mountain on the Blue Ridge. The southern edge enters the State opposite Trenton and follows a general west course, passing the Schuylkill two miles below Norristown, the Susquehanna in the western corner of Lancaster county, and the State line in Adams county. This tract is almost exclusively occupied by the red sandstones, red shales and conglomerates of the formation, and by numerous dykes of trap rock. The sandstones are quarried and supply good building material in several localities.

The lower members of the Paleozoic series lie on the northwest flank and foot of South mountain, beneath the magnesian Lower Silurian limestones of the Kittanning valley; these fill the broad valley between the Kittanning and the Blue mountains on the one side, and South mountain on the other. Their range is marked by great fertility of soil and the finest agricultural region in the State is in this great valley, occupying the greater part of Northampton, Lehigh, Berks, Lebanon, Dauphin, Cumberland, and Franklin counties. The northern half of the valley is occupied by the Utica and Hudson river Lower Silurian slate, from which have been taken large quantities of roofing and other slate products.

Beyond towards the northwest ranges the central belt of Upper Silurian and Devonian mountains and valleys, as far as the main Alleghanies—a region famous for the beauty and grandeur of its natural scenery, but not well adapted to general agriculture. At the main Alleghanies the scene changes. As one passes westward he descends between and over innumerable rounded knobs and short ridges, around the sides of which outcrops the bituminous coal beds. The highest points of the Alleghanies are capped with the Conglomerate which underlies the bituminous coal formation, or by the lower members of the series, the strata dipping gently towards the west, and the formation increases in thickness in that direction and overspreads the whole western part of the State, excepting the northwest corner.

Topographically, in general terms, the surface of the State is level in the southeastern part; hilly and mountainous in the interior, and rolling and broken in the western part. The surface of the southeastern part is only slightly elevated above sea level; farther westward and northward appear a series of parallel ridges 1,500 to 2,500 feet in height, extending in a curving belt across the State from northeast to southwest, and from fifty to eighty miles in width. The first one of these ridges on the southeast is South mountain, which is a prolongation of the Blue Ridge of Virginia; the last one on the west is the Alleghany range, which is the highest. From this range the surface slopes gradually towards the western State line. The Susquehanna river flows across the State in a general southern direction, drains a large part of these highlands and cutting in its passage many deep and tortuous canyons, collecting in a central valley and plain which separates the anthracite region on the east from the Devonian and Silurian mountains on the west, through which flows the Juniata. West of the Alleghany mountain backbone are three ridges about 2,500 feet in height, which pass out of the State into Maryland and Virginia. Generally speaking, the ridges east of the Alleghanies are too steep to be successfully cultivated, but the western slope is mostly arable even at high elevations. Productive valleys correspond to the general trend of the ridges, the principal one being Chester in the southeast part; Lebanon in the east; Wyoming in the northeast; Penn's and Juniata in the center; Cumberland in the south, and Monongahela in the southwest.

Generally speaking, the soil of Pennsylvania is rich; this is especially true of the limestone region in the eastern part of the State, as well as in some of the counties on the Ohio river in the western part, which are underlaid with the same rock. The limestone areas are well adapted to grain raising, as also are the mountain valleys of the interior. In the northern part of the State good grazing soils predominate, especial productiveness rewarding the farmer on the upper Susquehanna in the northeast part. On the highlands of the central northern counties the soil is thin and cold, but proceeding westward and into the northwestern part, better agricultural conditions prevail. The whole of the western border of the State, like the Ohio valley generally, is alike well adapted to grain raising and grazing. These latter soils are indicated by the character of the forest that formerly covered them. As will be seen in figures in later pages of this chapter, corn has during the past century been a great product between the Alleghanies and the Delaware river; wheat and rye have always been extensively produced in all the valleys of the State; tobacco during many years has been a large and profitable product in Lancaster and a few other counties. Orchard fruits of all kinds adapted to the climate, grapes and other small fruits in some districts have all added to the wealth and prosperity of the agricultural population.

The climate of Pennsylvania is widely varied, influencing in a corresponding degree the agricultural conditions. In the southern and eastern parts the summers are hot and the winters reasonably temperate. On the Alleghany highlands and the central and northern uplands the winters are very severe, and in some localities there is seldom a month in the year without frost. It has been said of the wide and deep valleys of the Susquehanna that the climate and other conditions are such that they might be made "a continuous vineyard rivalling those of the Rhine and the Rhone." Until the middle of the last century Pennsylvania was pre-eminently a great and rich agricultural Commonwealth. From that time forward, the construction of numerous railroads and other transportation facilities gave a powerful impetus to a great variety of other interests.

As early as 1682, according to statements of the founder of the colony, provisions were plentiful. In addition to such products of the soil as could then be obtained, the Swedes and the Indians brought to the settlement large quantities of game. Deer were sold at 2*s.* each and corn sold for 2*s.* 6*d.* Horse mills were in use for grinding corn. An early settler wrote, "We have peaches by cart loads." Penn wrote in 1683 to the Society of Traders, of the agricultural products of his colony as being wheat, barley, oats, rye, peas, beans, squashes, pumpkins, and melons, "and all roots and herbs that English gardens supply." In 1718 he wrote of his possessions that "God has made of a desert an enclosed garden and the plantations about it a fruitful field."

In 1752 Franklin recorded that 10,000 hogsheads of flax seed were exported from Philadelphia, and the flax product all made into coarse linen in the settlers' homes. A map of that year gives the product in flour as 125,960 barrels. In 1765 there was exported from Philadelphia 367,522 bushels of wheat and 148,887 barrels of flour, with over 60,000 bushels of corn.

The progress of agriculture in Pennsylvania, as in all other new settlements, was slow during many years after the arrival of the first pioneers. There were many causes contributing to this result. The early settlers found only a wilderness in which to lay their hearthstones and build their primitive homes. Although the forests were in many localities largely cleared of undergrowth, due to the Indian custom of frequently burning it out, still the clearing of the land to fit it for cultivation, even of the rudest sort, required time and arduous toil. Soon the settlers, notwithstanding Penn's humanitarian policy, began to suffer from Indian depredations, the terror from which, added to actual destruction, served to greatly retard settlement and pioneer work in the interior. Wild beasts, too, had their influence in this direction, an influence that was, however, more than offset, perhaps, by their great value in adding to the food supply. Seeds and shrubs for planting were frequently difficult to obtain. The character of the soil in different localities was not understood, causing loss where there might have been great gain. Tools were scarce and crude of construction. If brought from England they were often beyond the purses of those who felt their need. When better tools and the early machinery were available, many settlers were averse to their adoption. While German and Swedish settlers were industrious and persevering, they long clung to prejudice against innovations. The adoption of improved tools and methods has always met with more or less opposition in all countries, but with less, perhaps, in the United States than elsewhere. Laborers in some parts of enlightened England destroyed agricultural machinery as late as 1830. Wooden plows were the dependence of the Pennsylvania farmers until about the beginning of the last century. There was little attempt made towards improvement in agricultural methods until after the Revolutionary war. Enlightened men then began to appreciate the value of fertilizing, rotation of crops, the adoption of better tools, and the ultimate danger of exhaustion of soil. This sentiment led in 1784 to the formation of the Society for the Improvement of Agriculture, in Philadelphia; this was the same year that

Central Part of Washington

From Day's Historical Collections

saw the establishment of a similar organization in South Carolina, to be followed by one in New York in 1791 and one in Massachusetts in 1792. But even under such impetus as was felt under the work of this early society, progress was slow for many years, excepting in the immediate vicinity of Philadelphia. Reading matter on agricultural subjects was scarce and what there was attracted little attention from the average farmer of the period. Manuring was ridiculed in Chester county down to near the Revolutionary period and there was very little lime used before that time—a fertilizer that became in later years of great importance to the State. The early settlers placed little confidence in what they termed "book farming," a sentiment that remained to some extent to years within the memory of living persons. Stock on farms continued, partly through necessity perhaps, to be poorly-housed in winter and inadequately fed. Meadow production was confined almost wholly to natural grass growth; there was little clover before the Revolution, and no timothy. The introduction of the horse rake, and later of the thresher and the mowing machine was a slow process.

But in the course of time all of these untoward conditions passed away. The society before named continued its beneficent work in spreading intelligence and encouragement. A meeting of the members was held February 7, 1786 (the second year of its existence), in Carpenters' Hall, Philadelphia, with eighteen persons present. It was there agreed to present a gold medal to Colonel George Morgan of New Jersey, for "having the best farm yard the society has information of." This was the first medal presented by the society, and it seems they had to go over into the neighboring State to find a worthy recipient. On November 7 of that year another meeting was held, at which "was exhibited a drill plough just from England that cost £19." As new counties were formed other agricultural societies were organized in other parts of the State, stimulating farmers by offering premiums upon their products, and creating more earnest effort towards improvement in all directions. Agricultural literature, in the form of newspapers, periodicals, and books gradually came within the reach of all, and the more progressive men in every community studied and bettered their condition in the ratio that they adopted improvements.

Penn's petition of 1680 asked for land within certain limits in some directions, but wanted it "to extend northward as far as plantable." If this seems like a rather extravagant demand, and if Penn under his treaties with the Indians obtained a magnificent domain, he, on the other hand, sold his lands for low prices and adopted a policy in general that was most encouraging to immigration and his colony flourished from the first. Lands obtained under the treaty of 1768 were offered at £5 per 100 acres, with one penny per annum quit rent. Some of the rich coal lands of the State were sold at this price. Partly in consequence of these favorable terms, most of the very early farms were large in area, many of them including 500 acres or more. Germans, Swedes, Scotch-Irish, and immigrants from other European countries, as well as from England, hastened over to take advantage of the low prices of the rich lands of eastern Pennsylvania. Before the lapse of half a century after settlement began, agriculture was a prosperous industry in eastern Pennsylvania, notwithstanding all of the untoward conditions that have been described; and in the western parts of the State where the land was best adapted to tillage, nothing prevented a corresponding degree of prosperity except the difficulties attending transportation of grain and other products.

So great was the influx of immigrants from the distracted sections of Europe that the colony was alarmed at the prospect, and even in England fears were expressed that Pennsylvania would become a colony of foreigners. The German element, thrifty and industrious as they were, did not escape the feeling of jealousy that existed in 1720 and during some years later to such an extent that the matter received the attention of the Assembly.

The cereal crops that were produced in the eastern part of the State from the beginning down to 1800 were, as a rule, large and profitable. It is recorded, for example, that "the years 1751 and 1752 have been so fruitful in wheat and other grain that men in wanton carelessness sought to waste the supply; for the precious wheat, which might have supplied many poor, they used to fatten hogs, which afterwards they consumed in their sumptuousness. Besides, distilleries were erected everywhere, and thus the great blessing was turned into strong drink, which gave rise to much disorder." (German Chron. Ephrat., 190.) In all tillable parts of the State in early years distilleries were numerous; they offered about the only method of disposing of surplus grains that insured any adequate return.

The years of plenty just mentioned were followed by a period of scarcity. Indian depredations in 1755-6, and again in 1763, partially paralyzed agriculture; many families were driven from their homes, and large fields of crops were neglected or destroyed. During the period of the old French and Indian wars Pennsylvania supplied a large part of the subsistence for General Braddock's troops and the Virginia riflemen, and by 1776 the State had become second in agriculture and commercial wealth, with a population of 380,000.

Progress towards the western part of the State was slow, as far as applies to agricultural operations. It was fifty years after the first settlement before pioneers were dwelling on the banks of the Susquehanna, a hundred miles in the interior. As early as 1690, Penn had contemplated the founding of another great city on this river. In his letter proposing this enterprise he mentioned "the known goodness of the soyll and scituation of the land, which is high and not mountainous." Reports of productive soil and land that could be had farther west for almost nothing were, as they always have been, sufficient inducement to attract the hardy and adventurous pioneer into new regions, even in the face of danger and deprivation. The thrifty Scotch-Irish immigrants pushed on into the regions of the Susquehanna and the Juniata and laid the foundations of later prosperity, while considerable progress was made upon the arable lands in the Pittsburg region and along the streams of the remote western part. Some light is thrown upon the conditions in this section of the State by the records. In 1785, soon after the Indian title to lands in the northwestern part of the State was extinguished, explorers and surveyors were sent out by the Supreme Executive Council to survey lands which were to be donated to the troops of the Pennsylvania line in the army. Among these explorers was General William Irvine, from whose report we quote. He said he "began about four miles from Fort Pitt, east of which for five or six miles the land is pretty level, well watered with small springs and of tolerable quality; but from thence to the Allegheny river, which is about twenty-five miles due east, there is no land worth mentioning fit for cultivation; all between the Venango Path and the Allegheny there is very little land fit for cultivation, as it is a continued chain of high barren mountains, except small breaches for Creeks and Rivulets to disembogue themselves into the River." He proceeded eastward and wrote: "From Flat Rock to Sandy Creek by Hutchins & Snell, called Lycomie, is about twenty-four miles; on the first twelve there are a considerable quantity of tolerable level land, though much broken with large stony flats." This was all heavily timbered. From Sandy Creek to French Creek, seven or eight miles, he reported "no part is by any means fit for cultivation." He traveled over about 150 miles in locating these so-called "donation lands," a large part of which he reported as unfit for cultivation. The present condition of many parts of that region must greatly modify these statements.

In 1799 Thomas Hill made a horseback journey from New Brunswick, N. J., to Lycoming county, in the record of which are found a few glimpses of agricultural conditions at the close of that century. In Raritan county he reported the grass production as good, and the average of crops (cereals) as twenty bushels to the acre on the east side and twelve bushels on the west side. At Phillipsburg and East Town (Easton) he found limestone land "very indifferent," with an average product of twelve bushels, to which he added, "red clover and pretty good lots." Hay, he said, averaged one and a half tons. On a part of his journey he reported finding the settlers "all Germans;—the most early rising, hard working people I ever saw." On his third day of travel he recorded: "This country has been settled with Germans about fifty years. I hope to be soon through with them." He complained of the food they gave him, which doubtless accounts for his desire to "be soon through with them." He found no crops "equal to the Raritan" (valley). The Northumberland region he reported as only fairly good. After crossing the Alleghanies the bottom lands, according to the traveler's statement, were rich and productive, and "covered with immense white pines, sugar maple, beech and birch." He speaks of John Hill's, on the "south side of Loyalsock," and adds, "For six miles from this spot, that is, three each way, there cannot well be more than seven farmers, a miller, and blacksmith, say nine." This indicates the progress that settlement had made in that region a century ago. He thought there would never be sufficient settlement there "to support a school teacher." (See Pa. Mag., vol. xiv., pp. 189-98.)

The war of the Revolution seriously interfered with agricultural operations in all of the colonies. In 1779 there was a real scarcity of food products in Pennsylvania; prices of all grains were very high, and the currency, depreciated almost to worthlessness as a purchasing medium, gave little relief to the people if they had it at hand. After the close of the great conflict the change in these conditions was rapid and gratifying. In 1790 the population of the State had reached 434,370, and there were scattered settlements in nearly all of the remotest parts of the Commonwealth. The western section was attracting more and more attention as desirable for agriculture. Washington, Allegheny, Beaver, Fayette, and Indiana counties were reported as particularly well adapted to the growth of cereals, while in Mercer, Crawford, and some other counties were found superior grazing lands. The Juniata valley had become celebrated for its wheat production. It is recorded that one farmer in one season had a crop of 1,000 bushels. In 1790 it is said that 150,000 bushels of wheat were brought down the Susquehanna, passing through Middletown for Philadelphia, a large part of which was grown in the Juniata valley. At that time flour was being shipped up the Susquehanna for Northumberland settlers. All waterways were used for transportation purposes where possible, in early times, for the roads were bad and during part of every year were practically impassable for heavy loads. Freightage by team was consequently very costly, a fact that for many years was a great obstacle in the way of agricultural progress in the western part of the State. In 1794 wagon freight from Philadelphia to Pittsburg was from $5 to $10 per 100 pounds, a rate that was almost prohibitive on many commodities. Salt then sold in Pittsburg for $5 per bushel. Freight on a barrel of flour from Pittsburg to Philadelphia was nearly as much as the value of the flour. This product could not be shipped north from that point in very early years, for fear of Indian depredation, although it was many times attempted. Some flour was sent southward by water, a farmer building his own ark, which he loaded with his own product and that of some of his neighbors and floated it down to New Orleans. Wheat was so plentiful in western Pennsylvania and the market so poor, that it was customary to feed it to cattle, while rye, corn, and barley had almost no value whatever as food for man or beast. These conditions were what led to the building of the scores of small distilleries of early times. The later construction of canals and railroads equalized all of these disadvantages with the advantages of more fortunately situated sections.

With the opening of the last century the population of Pennsylvania reached 602,365, a gain of nearly 170,000 on the preceding decade. The efforts of the Society for the Promotion of

Agriculture, before mentioned, and those of the other early organizations of this and other States, had taught the farmers many salutary lessons in the details of their occupation and also had inculcated among them a sentiment of self-reliance which was of great benefit to them during the blockade period preceding the war of 1812, which latter did not seriously affect their interests.

In 1810 the population of the State was 810,091. In that year it is recorded that there were ground in Pennsylvania mills 4,024,640 bushels of wheat, besides which there were large shipments of the unground grain to other sections. In 1809 the Lancaster county millers produced 99,000 barrels of flour, and Northumberland, 160 miles north of Philadelphia, produced 105,000 barrels; it should, however, be remembered that those counties were larger then than at the present time.

The war of 1812 somewhat checked immigration, as well as all material interests, but in 1820 the population had increased to 1,047,507, and the farmers of the State had begun to profit by the improved facilities for reaching markets with their products. Fertilizers were rapidly coming into use and limestone had begun to be quarried in Lancaster county and burned into lime to spread upon land. In later years every farm in that section showed the effects of this fertilizer. Orchards and nurseries were numerous in the older settled parts and fruits were plentiful. As early as 1801 Robert Caldwell advertised in the "Northumberland Gazette" that he had a "nursery of young apple trees now fit for planting out, of excellent kinds;" his price was 6*d*. each for three-year-old trees.

In 1830 the State population was 1,348,233, a gain of 301,726 in ten years. Farm products of all kinds increased in like ratio and the whole State was on a high tide of prosperity. Even the memorable financial troubles of 1837-40, which were so disastrous in many parts of the country, retarded the production of cereals and the increase of population in this State but little. It is recorded of the decade from 1830 to 1840 that "every material interest of the State was thoroughly developed as far as it was in the power of the people and the State government to do so. (Report of Internal Affairs, 1874-5, p. 41, part III.)

In 1840 there were nearly 9,000,000 acres of land under a fair state of cultivation. The succeeding decade to 1850 saw continued advancement in all agricultural conditions. In the year just named there were in the State 127,577 farms averaging 117 acres each. The production of corn reached 19,835,214 bushels. Tobacco was becoming an important product, nearly 1,000,000 pounds being grown; this quantity had increased to 3,181,586 pounds in 1860. A large part of this came from Lancaster county, but after 1860 the industry spread to York, Berks, and Cumberland counties. In 1860 there were 10,463,296 acres of land under cultivation in the State, nearly one-half the acreage of the whole State. There were then 156,000 farmers, who produced of wheat 13,042,165 bushels; 28,196,821 of corn; 530,714 of barley; 2,245,413 tons of hay; 58,653,511 pounds of butter; 2,508,556 pounds of cheese, and 4,752,522 pounds of wool.

Western Entrance to York, Pennsylvania

From Day's Historical Collections

The period of the great Civil war was at hand, which was to create a revolution in every department of industry. Pennsylvania sent to the war not less than 100,000 men from its agricultural element. Laborers became scarce and many farms were left in the care of agents. Prices of all kinds of land produce rose rapidly, and farm hands demanded from $3.50 to $4.00 per day in harvest time and $35 to $40 per month by the year. Meanwhile a meeting was held in 1851 and steps were taken towards organizing a State Agricultural Society. The purpose was effected through action of the State legislature in the same year, and the first fair was held at Harrisburg in October.

The increase in cultivated acreage from 1860 to 1870 was 1,052,669 acres and the population rose to 3,521,951. At the close of the decade (1869) the production of wheat was 3,899,967 bushels; oats, 36,478,585 bushels; corn, 34,702,006 bushels; rye, 3,557,641 bushels; barley, 529,562 bushels; buckwheat, 2,532,173 bushels; potatoes, 12,889,367 bushels; hay, 2,848,219 tons; butter, 60,834,641 pounds; cheese, 1,045,209 pounds; wool, 6,561,723 pounds; tobacco, 3,467,539 pounds. The State College, opened in 1859, was contributing effectively to the prosperity of the agricultural interests, as noticed a little further on. The decade closing with 1880 showed a gain in the aggregate cultivated acreage from 5,980,000 acres to 6,354,750 acres. The production of wheat for 1880 was 21,750,000 bushels on an acreage of 1,261,500; corn, 43,750,000 bushels, acreage 1,261,500; oats, 32,250,000 bushels, acreage 1,156,000; potatoes, 9,125,000, acreage 151,750; buckwheat, 2,812,000, acreage 172,250; hay, 2,450,000 tons, acreage 2,550,000; tobacco, 38,750,000 pounds, acreage 26,670; (of this latter product, Lancaster county produced 16,000,000 pounds). From 1871 to 1880 the number of horses in the State increased from 546,100 to 616,750, and the number of cows from 788,900 to 851,750.

Meanwhile, in 1876, steps were taken for the organization of the existing State Board of Agriculture, a department that has since been of inestimable value to the farmer. A bill was read in the legislature on January 24 of the year named "to establish a State Board of Agriculture," which, with some amendment, was passed in the following April. The board comprised five *ex-officio* members, headed by the Governor; six members to be appointed by the Governor, and twenty-six members to be elected by the county agricultural societies throughout the State. The report of the secretary for the first year is of deep interest to all persons interested in the agriculture of the Commonwealth and may be referred to for details. He said that there were then only five States in the Union where agriculture was so diversified as in Pennsylvania. With a large city at either end of the State and a great manufacturing district between them, the farmers find a ready market for all their products. The average size of farms at that time was a little over 100 acres. Most of the farms were owned by their occupants. In the eastern and southern parts most of the grain, excepting wheat, was being fed on the farms. Along the railroads from forty to fifty miles from Philadelphia, milk was the principal product. Farther away from the city cows were still numerous and highly fed, but butter took the place of milk as the chief product of the dairy. Corn was an important crop, but not nearly to the extent or profit of some of the other cereals. The important subjects of the promotion of forestry, horticulture, botany, the value of fertilizers, veterinary science, destructive insects, the raising of poultry, the beet sugar industry, adulteration of various commodities, fish culture, improvement of roads, etc., have received and are receiving attention from this department to the great benefit of the farmer at large. Kindred associations or institutions that now contribute to the spread of agricultural knowledge and the promotion of reforms are the Department of Forestry, separately described in another part of this work; the State Dairymen's Association; the State Horticultural Association, which has been in existence about forty years; the local Farmers' Institutes, which were inaugurated by an act of 1889 and are now held annually in many parts of the State; the State Live Stock Sanitary Board, established by an act of 1895, etc.

Since the close of the Civil war, and especially within the last fifteen or twenty years, the farmers of Pennsylvania, in common with those of most other sections of the country, have felt the de-pressing effects of the necessary transition from the abnormally high prices and general expansion of the war period to the conditions prevailing at the present time. It has been shown by investigation that the value of farms in this State since 1880 has diminished to the amount of $567,000,000. The following figures will show the changes in prices of several principal farm products from 1850 to 1890:

	1850	1860	1870	1880	1890
Flour	$5.45	$5.65	$4.50	$4.75	$4.35
Wheat	1.25	1.32	1.28	1.48	.90
Corn	.61	.74	.85	.62	.42
Oats	.42	.44	.55	.47	.29

These figures are suggestive, and, taken in connection with other well known causes, have aided in producing the existing feeling among a large class of farmers, that the occupation is no longer a very desirable one. Others who are more optimistic as to the agricultural future of the State have not despaired and hold up to their brethren the other side of the picture, which relates to the prices now paid by the farmer for tools, clothing and food as compared with those of former days. The report of the State Board of Agriculture for 1890 has a paper upon "Farm Values," in which it is noted that in 1870 a mowing machine cost $125, which could be bought in 1880 for $75 to $90, while in 1890 a good single mower could be bought for $45 to $50. All rates of transportation have fallen as well as those articles making up the needed supplies of the farmer; but while these are in a measure a source of encouragement, the fact of the great reduction in farm values remains. As a whole, however, the State of Pennsylvania, as a general agricultural district, stands well up towards the front among the Eastern States, a fact that can be amply proven by reference to current reports and to the latest census returns.

The State Agricultural College.—At the annual meeting of the Pennsylvania State Agricultural Society held January 18, 1853, a report was made on the advantages of an agricultural school. The subject was discussed and a resolution was finally adopted calling a State convention of the friends of agriculture to promote the matter. This convention met in March, 1853, and there a committee was appointed to continue the undertaking. In accordance with recommendations of this committee made at a later date, an act was approved by the legislature, April 13, 1854, establishing the school. The institution was to be placed under the general control of a board of trustees "composed of the presidents of the county agricultural societies and the president and vice-president of the State agricultural society." A second charter was issued under date of February 22, 1855, in which the board was constituted of thirteen members, four of whom were *ex-officio* officers—the Governor of the State, Secretary of State, President of the State Agricultural Society and the Principal of the college.

Carbondale Churches in 1840

From an old print

After much investigation the site for the institution was chosen in Centre county, very near the geographical center of the State, in a locality noted for its beautiful scenery, fertile soil, and pure water. In May, 1856, a contract was made for the erection of a building, but the west wing only was ready for use in February, 1859, and the remainder in December, 1863. The first title of the institution was "The Farmers' High School of Pennsylvania." In 1862 it was changed to "The Agricultural School of Pennsylvania," and in 1874 it was given its present title, "The Pennsylvania State College." The conditions of the Congressional land grant of 1862 were accepted by the State, and the land scrip was sold, the proceeds of which have since constituted the larger part of the income of the college. Under the provisions of what is known as the Hatch act of Congress, of March, 1887, the Experiment Station was organized as a department of the college and so remains to the present time. One hundred acres of the farm were set off for the use of the Experiment Station, sixty of which are utilized as a demonstration of a model farm, with an office and laboratory building 42 by 59 feet, two stories high; in this are the director's office, business office, dairy husbandry office, library and reading room, agriculturist's office, chemist's office, chemical laboratory, photographing room, etc. Since the establishment of the Experiment Station, which has been of such immense practical benefit to the agriculturists of the State, although the institution is not wholly agricultural in its purposes, it still aims to give special and paramount importance to that field of work, both theoretical and experimental. Having proportionately increased its other subjects and courses of study and its illustrative equipment, it is at the same time able to impart knowledge of the various sciences in such manner as to show their application to the more important industries, and to combine with every branch of instruction actual practice in the shop, the field and the laboratory. As at present organized the college is governed by the board of trustees, from whom is selected an advisory committee of five persons, including the president of the college, George W. Atherton, LL. D. H. P. Armsby, Ph. D., is secretary of this committee. The list of officers and assistants includes sixteen persons, and the faculty and instructors, twenty-seven persons. All phases of practical and scientific agriculture are taught, with physics, mechanical and civil engineering, chemistry, zoology, mathematics, English and rhetoric, geology, ethics, German language, physical science, etc.

The experimental farm has a barn 54 by 100 feet, with a wing especially adapted to experimental purposes, a horse barn, a calf barn and a 100-ton silo. There is also an example of the modern creamery, with all of the best types of machinery for the manufacture of butter and cheese. The number of persons who directly or indirectly receive instruction every year from this institution approaches 1,000, while the spreading gratuitously of its numerous educative bulletins, the many valuable papers supplied in the annual reports, and various other methods of imparting instruction, give the college a commanding position among the educational institutions of the State.

FORESTS AND FORESTRY

The density of the forests on the Atlantic seaboard when the earliest settlers arrived was in one sense a misfortune. Before an acre of ground could be sowed with grain an acre must be cleared of trees. There was more timber than could possibly be used. This led to extravagance and waste of the forest resources. Had the forests been located west of the Alleghanies (and the coast treeless), with the country otherwise as inviting, no doubt the first thing these same settlers would have done, after establishing themselves, would have been to provide for a future supply of timber.

Except in a few small areas Pennsylvania was originally covered by forests. East of the central mountain ranges where the oak, hickory, elm, ash, tulip-poplar, chestnut, walnut and butternut predominate, the average timber production per acre was probably from 3,000 to 5,000 feet, board measure.

In the mountain ranges in the central part of the State, white pine and hemlock were much more important than the hard wood or broad-leaved trees. There were many acres which produced as high as 50,000 feet of good lumber. In the same region, often intermixed with the pine and hemlock, beech, birch and sugar maple were quite common, though as a rule they seldom produced more than 3,000 feet of lumber to the acre. West of the Allegheny river the oaks were the predominant trees. Taking the entire area of the State the sugar maple was formerly probably the tree which was most common and most widely found.

At the present time there is between one-sixth and one-fourth of the State which is producing almost nothing; and which would in the long run yield its largest revenue and greatest public benefit if it were devoted to production of forests.

No other nation has ever equalled America in the removal of forests. The thoroughness and celerity with which this work has been accomplished is a surprise to lumbermen from abroad. "Forestry has been well said to begin with the axe." It should be added: it does not end there. The lumberman destroys his own vocation; the forester perpetuates it.

Important as our forests have been for the lumber which they have furnished, and the employment which they have given to our people, it is more than doubtful whether or not the injury to the country which is likely to follow from the vast denuded areas left by the lumberman, and by the fire which follows him, will not lead to a public injury greater than the good already derived. This problem may be briefly stated thus: *Living forests are more important to our country than dead lumber.* This statement is so true and yet so likely to be regarded as extreme that it should be explained by saying that forests

(a) Furnish lumber and nourish the arts; but even if removed it would be possible to import sufficient wood for our needs, as England is practically doing now.

(b) Forests conserve rainfall and prolong the period of usefulness of the water which the earth receives from the sky.

(c) It is almost certain that they moderate climatic extremes, because of the watery vapor which they are constantly returning to the air. This prevents (at least to a certain extent) the escape at night by radiation of the earth's heat and so prevents premature frost.

(d) Forests furnish nesting places for birds, upon the preservation and multiplication of which agriculture depends to destroy the increasing plague of insects.

(e) Of all the agencies for the removal of carbon dioxide gas from the atmosphere, and for the restoration of oxygen to it, there is nothing so effective as plant life.

(f) As sanatoriums, it is coming to be recognized that the forests are of the greatest value to those who are weakened by the exacting duties of our modern life. Pulmonary tuberculosis will, in the near future, be almost entirely treated by open-air life in or near extensive bodies of woodland.

For practical purposes we may say that in Pennsylvania, as elsewhere, forestry may be considered under two heads.

I. State forestry, under direction of the State government, where immediate financial returns are not of necessity demanded.

II. Individual or corporate forestry, in which immediate returns, of financial or other character, are desirable and expected.

State Forestry. The first duty of government is to perpetuate itself by establishing and maintaining conditions which promise to lead most surely to an enduring prosperity of the people. To this end every available acre should be made productive. Ground that cannot be farmed by the citizen, but from which the State can in time gain a lucrative timber crop, should be devoted to forestry. In nothing is a settled, intelligent plan more requisite than in this work. The mistake of a single administration might ruin a plan for a century which otherwise would have been an entire success. As in our public school system only trained instructors can be legally employed, so it should be in the forestry work of the State; merit should be the only reason for placing a man on the forestry force, and sure promotion should reward the most efficient public servants entirely irrespective of what their political preferences may be.

No plan yet suggested promises more surely to prevent State forestry from becoming an adjunct of a political system than to establish a school of practical forestry on one of our State reservations, where, along with thorough instruction in the necessary branches, the pupils shall acquire a working knowledge of their profession and an ability to direct the operations by themselves laboring in the forest under competent supervision. This would make their services so immeasurably superior to those of untrained men that there could be no thought of employing inferior help. It would also open a promising avenue to our young men who are now considering forestry as a life work.

Pennsylvania in the near future will be in actual possession of half a million acres of land suitable to the growth of timber trees. To properly manage this vast area, which will probably be doubled in five years more, will require at least five hundred trained men. Of these at least one hundred should be accomplished foresters. This seems like a large force to be provided for out of the public treasury. It must, however, be remembered that such a force will be expected to place the Commonwealth in the way of a return of several millions of dollars annually. The experience of Germany, and England in India, proves that the best service pays by producing a proportionately larger financial return. It is worth while to remember that "Prussia from 6,000,000 acres of State forests derives a net annual revenue of $1.50 per acre. The aggregate of the state forests in Germany is 10,000,000 acres, from which is derived an annual average net profit of $25,000,000; *the forests* of Germany support 3,000,000 people."

To mature a crop of timber will require from thirty to one hundred years. Locust may become available for railroad ties in about thirty years. White pine can hardly be expected to yield any considerable revenue inside of seventy-five years. The oaks will probably require a longer period. It is not to be expected, however, that during all this time there will be no return. The increasing scarcity of timber convinces one that in from ten to fifteen years the forest should be made self-supporting by sale of smaller timber, which necessarily must be thinned out to allow a better growth of the more desirable remaining trees.

There always has been a class of men who can see no wisdom in entering upon a policy which requires so long a time for financial returns. To all such the sufficient answer should be that the most competent statesmen recognize the fact that our safety as a nation demands restoration of extensive bodies of timber on ground which will produce no other crop profitably, and the sooner we begin the sooner will the demand be satisfied. The longer we delay it the greater will be the difficulties, the greater the damage done, and the more costly the unavoidable task. President Roosevelt clearly realized this when he declared that forestry and irrigation were the two most important internal questions now before the country.

In the acquisition of land for its reservations, by purchase, the State is simply restoring it to the legal status it had before it was patented by the individual; that is, the Commonwealth pays no taxes on the land which it owns. By some uninformed people this is thought to be a hardship to the county, because it is forgotten that, first: This land, with the timber on it, was sold for less money (26 2-3 cents per acre) than the State is now paying to gain possession of it after the timber has been removed; second, that the individual and the county have already reaped the benefit of the timber crop removed; third, that much of this land has become so poor that the owner refuses to pay the taxes upon it, and the land has practically reverted in this condition to the county; fourth, that this land is now valuable solely because the State has appeared in the market as a purchaser; fifth, the county can not, or will not, protect this ground from fires and from thieves, which together would forever prevent it from becoming a source of revenue; sixth, that it is necessary for the prosperity of the county itself that this ground should be made productive again and that the whole cost of this falls upon the Commonwealth; seventh, that the State pays annually twenty-five dollars a mile upon the roads which run through the reservation, and so places the highways in better condition than they were under county administration. (It must also be remembered that there are but few schools for the county to support in regions where the State is acquiring its reservations); eighth, that taxes are paid for protection, and as the county has in the past practically failed to protect timber land, it merits no compensation where it fails to render protection.

It is fairly an open question whether our whole method of obtaining revenue from timber land should not be changed. It is safe to say that thousands of acres of land are being denuded of trees annually in this State because the owner can not afford to pay taxes upon land which yields no revenue and is in constant danger of having its trees destroyed by fire. If standing timber "earns its right to stand by the benefit which it confers upon the public," any system of taxation which encourages the owner to remove the timber is an injury to the public. It would be wiser to remove this tax from standing timber, but to tax it when the owner utilizes it, because he has thus deprived the public of what is important for its welfare and derived for himself an income by doing so.

The work of forest restoration on State lands has actually commenced. Within five years millions of young trees will be planted on our reservations annually. The State is also rendering a no less important service in the protection which public and private lands are receiving against incendiaries and timber thieves. Within eighteen months a distinguished judge asserted that the owner of unseated land had practically no protection against such lawless persons. The appearance of the State as a prosecutor in such cases has wholly changed this. Convictions are now of common occurrence, even within the judicial district where the remark was recently made.

Education has always been regarded as a legitimate field for State activity. Forestry has not yet ceased to have an educational aspect. It would seem to be an entirely proper thing if from the State nurseries there could be a free annual distribution of young forest trees to our citizens. The cost would be small, the good gained incalculable, and the lessons imparted would be lasting.

Bristol from the Island

From Day's Historical Collections

II. Individual or corporate forestry differs with State forestry in that it anticipates returns within a reasonable period. For example, a railroad company which is obliged annually to purchase large number of railroad ties, and discovers that these are constantly becoming more difficult and more costly to obtain, might well undertake to grow them itself because it would be the shortest visible manner of obtaining what was essential to them, and because it would educate other land holders to produce ties on land which would yield no other crop.

It is fortunate indeed that there are several species of trees which are native to, or will thrive in, Pennsylvania and which are of such rapid growth that the individual who plants them may himself receive a revenue from them. There is, for example, a constantly increasing demand for pulpwood. Tulip poplar, or yellow poplar *(Liriodendron)*, grows naturally and rapidly in our mountain valleys, and the Carolina poplar increases in size with even greater certainty and rapidity on almost any soil which has some fertility and moisture. Both of these trees furnish good pulp material.

The tanning industry, of all others, appears to be the one which will most surely and speedily look to forestry for a perpetuation of its supplies. It has been our custom in this State to depend mainly upon good-sized oak or hemlock trees for tanning bark. The fact is that a larger percentage of tannin may be obtained from young oak trees than from the old. In Germany the most of the bark used comes from trees which are between fifteen and forty years old. If we protect a black oak or rock oak stump from which the tree has recently been removed, the sprouts will in the course of a few years become valuable for tanning purposes. The chestnut tree, which is a quick grower, would; under proper care in about twenty years from the seed or the stump, furnish an additional resource upon which the timber grower could count. Chestnut wood yields its tannin readily to proper treatment. Probably the growth of willows for basket making will before long become a source of revenue.

There is another aspect from which individual or corporate forestry in Pennsylvania should be considered. In the nature of the case, State forestry here will probably be limited to such parts of the Commonwealth as are hilly, rocky or infertile, for the reason that only land of this character is likely to become part of our forestry reservation system. It is surely not wise for the State to compete with its citizens in any business which they can be induced to undertake for themselves. Competition of this sort might prove disastrous to private enterprise. But as the effects of forestry upon water flow, climate and atmospheric purity are equally important in all portions of the Commonwealth, inducements should and probably will eventually be offered sufficiently great to enable land owners to undertake the work of forest restoration in regions where the State is not doing so.

Individual forestry as a rule would naturally be done upon a better soil than that owned by the State. The result would be a better yield, in a shorter time, than that on the State reservations. This would naturally be in the interest of the individual. It is to be remembered that the private land owner, however, can hardly sacrifice land which is capable of yielding a larger or a quicker return if devoted to production of grain or to grazing, important as this may be to the community, unless the community in some way compensates him for growing forests. There appears to be no more direct and equitable method of compensation than by reduction or rebate of taxes.

In fact this is in Pennsylvania already an accepted principle, and laws are now in force which allow such reduction. It is strange, however, that so little advantage is taken of them by those most directly interested.

It may be confidently asserted that the production of timber in this country will never be in excess of the demand. To show how great a quantity of wood we are using here annually I quote the following, at second hand, from the "Forester" for May, 1902, p. 216: "In 1899, the pulp industry of the United States consumed daily 6,648 cords of wood, which would approximate an annual consumption of 955,400,000 feet, board measure; this was but one-half of one per cent. of the total wood used for other purposes." In other words, the quantity of wood used for other purposes than pulp annually in the United States reaches the enormous figure of 191,080,000,000 feet, board measure.

Already some very important forestry work has been done by individuals and by corporations. Those who are charged with the administration of the Girard estate have for several years been engaged in forest restoration in Schuylkill and Centre counties. General Paul Oliver and Mr. Albert Lewis are now successfully illustrating restorative forestry methods on their grounds in Luzerne county.

One phase of forestry which is common enough abroad, in Germany, but has been little considered here, merits a brief consideration. We allude to communal forestry; that is, a village, as a corporation, owns an area of forest land, which is placed under scientific forest management. A comprehensive working plan is made and good roads are carried into all parts of the wood. The annual crop of timber is harvested and care taken to keep this well within the annual yield. The income from this communal forest belongs to the town or city. From it local expenses are paid and no taxes are levied. There are cities in Germany where such forests not only furnish the money as above stated, but in which free kindergartens, free baths and free music are provided. Such a condition seems to be almost ideal. It would be good as far as it could be adapted to our more exacting life, but we require more than the average German citizen.

It is not too much to say, however, that the water supply of our cities and larger towns should come from a forested area. The collecting surface should be as near the stream head as possible, and beyond possibility of any contamination. The town or city should absolutely own and control this area. There can be no doubt that under a proper system of management, if the area were covered with forests, almost every town or city of more than twenty thousand inhabitants in this Commonwealth could have water brought to the doors of its citizens in a few years without tax or charge to them.

Here forestry lends its services directly to the health, longevity and comfort of our citizens.

A wooded wilderness is necessarily a forest, but every forest is not necessarily a wooded wilderness. The average American fails to recognize that a forest may be intersected by well kept roads, which lead to towns or cities within a territory which is, in the main, devoted to the production of timber. This misapprehension of the true significance of the term has done infinite harm to the forestry cause in this country. Forestry exists for the purpose, primarily, of perpetuating lumbering and manufacturing interests, and to do the work which is required it is necessary that the workmen live in or near the forest. It would simplify our conception of this whole problem if we were to regard forestry as that branch of agriculture whose business it is to produce trees.

It is rarely given to a generation which begins a great reform to see that reform consummated. The forestry movement has been in every sense a genuine reformation. It has changed the thoughts of practically an entire nation. This of itself would certainly indicate that there was a widespread recognition of the fact that our civilization was taking, in part, a dangerous direction. No mere local movement could have accomplished the change which we have witnessed within the lifetime of a generation. The part Pennsylvania has borne in working this change is one of which the State may well be proud, and it is proper that this be placed upon record.

"On April 3d, 1872, Richard Haldeman, of Pennsylvania, introduced into Congress, by unanimous consent, a bill to encourage the planting of trees, and for the preservation of woods on the public domain." He alluded to the measure on April 11th, as introducing a new feature into the legislation of the country. Of course Mr. Haldeman was not ignorant of what had been done in forestry in Germany and in France, and he was fully aware that but very few of our citizens would recognize the far-reaching consequences of the movement which he was inaugurating. It is almost certain that Mr. Haldeman himself could not have foreseen that within thirty years the general government would have set aside many millions of acres on the public domain to be devoted forever to the production of timber. After all, this prosaic world does move more rapidly than its most progressive citizens. No better address upon forestry than that of Mr. Haldeman, or better adapted to the period of its delivery, has been made up to this time in this country. The measure which he advocated was defeated. The agitation, however, was productive of good results, for the following March Mr. Donnell of the committee on Public Lands submitted a report upon the cultivation of timber and the preservation of forests. We may well suppose that this was, in part, led up to by the recommendation of the American Association for the Advancement of Science that the subject of national forestry be inquired into, and the fact that the President had made this recommendation the subject of a special message.

The late Washington Townsend, then representing Chester and Delaware counties in Congress, bore a conspicuous part in directing the movement which resulted in sending the late F. B. Hough abroad to study forestry conditions and report upon the same. Mr. Hough's volumes were of necessity hastily prepared. They contained many partial statements, and were not without error in some respects. The marvel is that they were as valuable as they have since proven, and to this day they may be studied with advantage. The dates of publication of Mr. Hough's reports are 1877, 1878, 1879 and 1882. In the meantime our State Board of Agriculture had recognized the importance of this new movement. Thomas J. Edge, then secretary of that representative body of farmers, lost no time in directing attention to the forestry agitation in its relations to agriculture. The consequences were that in the report of the State Board of Agriculture there were no less than five papers upon the forestry problem, as it then presented itself to us. The report of the next year contained two papers upon the same subject. Looked at from our present standpoint these papers were immature, partial expressions of great truths; but they paved the way to better things.

The most valuable paper upon forestry which the times then had produced in Pennsylvania was the report of Dr. Roland, of

York. It contained much valuable information, but did not, in fact could not then, point out clearly what was to be done. It is quite true that we had, then as now, the examples of older countries where forestry was a well established science, to follow; but these were then unapproachable ideals. There never was a time when a young government did, or could, by a single act introduce such a perfected system into its working parts without creating strain. The citizenship of the country under a popular government would ask, why all these new offices, why this increased expense?

Besides all this it is more than doubtful whether any foreign system of forestry would be, as an unmodified whole, the best thing possible in Pennsylvania, or the United States.

The legislative session of 1885 authorized the Governor to appoint an Arbor day, and in 1887 a similar enactment was placed upon the statute books. The day has accomplished, through the public school system of the State, very gratifying results. Though it has not led to the creation of any forests, it has brought about an increased respect for a tree, which in itself is a most hopeful sign in a nation which had devoted most of its early energies to destroying forests and which, rightly enough for the time, considered land worth more without the trees than with them.

In the year 1877, the interest of a small legacy left by F. Andre Michaux became available for use in the creation of proper forestry sentiment among our people. It is quite true that the most of the subject matter of those lectures was only faintly tinctured with forestry. It is amusing now to recall the criticism which the Michaux forestry lectures received. One distinguished scientist, since gone to his reward, lamented that so good an opportunity for teaching abstract science should be given to the popularizing knowledge, which he despised. Another equally distinguished scientist considered that these lectures should not be called forestry lectures at all, and suggested several better purposes to which the money could be applied. Neither of these gentlemen realized that the public, which the testator wished to reach, cared nothing for either high science or pure forestry, and that it was better to lecture to large audiences, in a popular way, than to empty seats, in a scientific way. But the criticism availed nothing. The speaker kept serenely on lecturing to ever increasing audiences, until after the fourteenth and final annual course was delivered, when it was not difficult to see that by some means the public had absorbed and welcomed the forestry idea.

Already at this early period the newspapers of our State had lent the new movement their unqualified support. This they have continued to do. Without their aid progress would have been slow indeed.

It was a hopeful sign that the people, while recognizing the rights of the land owner, were also recognizing the fact that he was under a moral responsibility not to despoil the State by waste of timber resources, and thus entail hardship and needless burdens upon the children who succeeded him. It was commencing also to be recognized that it was a legitimate function of the State to interfere and to see that he did not do so. Herein was probably the foundation upon which the people rested when they began to demand that certain portions of the State should again become the property of the Commonwealth, and disregarding individual benefits, be managed in such a way as to promote the prosperity of all. These State reservations were to be, in addition, the outing grounds for all and upon which no one could ever acquire exclusive privileges. To anticipate, it may be well here to remark that the near future will probably prove that in establishing such reservations, the State has done its most beneficent work in preventing spread of pulmonary tuberculosis and in curing it when started.

New York began her system of State forest reservations earlier than Pennsylvania, and had already secured about a million of acres of land before the State of Pennsylvania began to acquire land for this purpose.

The spring of 1886 brought a new force into the forestry field. Some public-spirited ladies in Philadelphia took measures looking to organizing a Pennsylvania Forestry association. At present, 1902, there are nearly two thousand members in this society. It represents the most active public spirit of the State. There is not a county in which its influence is not felt. To its credit be it said that, during the sixteen years since the society was founded, it has always been wisely aggressive for the forestry movement. It has never awakened active hostility by rash, impolitic or harsh measures.

The Pennsylvania Forestry association has published, once in two months, a modest little journal, "Forest Leaves," which has been widely distributed and done an important work. There never has been a lack of material for its pages, though it never has paid for contributions. In 1892 the association had gained strength enough to employ a general secretary, who was to devote his entire time to the forestry work.

In January, 1893, D. Smith Talbot, of Chester county, introduced into the legislature a measure for the Pennsylvania Forestry association. It was entitled "An Act Relative to a Forestry Commission and Providing for the Expenses Thereof;" this act became a law, and the commission appointed by Governor Pattison published its report in 1895 and was immediately thereafter discharged.

Meanwhile the legislature of 1895 had created the State Department of Agriculture. In this department a division of forestry was placed on a permanent basis, having an officer designated as the Commissioner of Forestry, whose duty it was to report upon the various forest conditions of the Commonwealth and to assist in creating an interest in forestry.

The following session (1897) of the legislature witnessed most important advances. First of all a permanent committee on Forestry was authorized in both the House and Senate. Before this all forestry measures were referred to the committee on Agriculture, which, having already heavy burdens, could hardly be expected to recognize fully the claims of forestry. No more important advance in forestry for this State has been made than by the appointment of these committees. That same session, constables of townships were made *ex-officio* fire wardens and were charged with the duty of suppressing forest fires and authorized to call out men to do the work. The compensation allowed was fifteen cents an hour for constables and twelve cents an hour for the workmen. This never was considered an ideal law by those who urged its passage. It was only accepted as the best attainable when the bill offered by the commissioners of forestry in 1895 had been killed in the Senate committee on Agriculture, after it had passed the House by a small majority and a desperate struggle.

There had long been a law on the statute books which made it the duty of the county commissioners to appoint detectives to ferret out and bring to punishment those who created forest fires, but it was generally disregarded because there was no punishment specified for failure to make these appointments. This was corrected by the legislature of 1897 and a penal clause was attached to the law. It is now more effective and an increasing number of arrests are made and convictions had each year.

The session of 1897 also authorized the purchase by the commissioner of Forestry of lands which were sold by the county treasurers and commissioners for non-payment of taxes, when these lands could be had at a price not in excess of taxes due and costs. In this way the first lands for the State Forestry reservations were obtained. Forestry reservations were first authorized by the session of 1897. Further allusion to this will be made later.

The session of 1899 enlarged the power of the commissioner of Forestry by authorizing him to purchase lands other than those sold for taxes, with the consent of the Governor and the Board of Property, when these lands could be had at suitable prices. But few purchases were made under this act, as it was soon practically superseded by Governor Stone completing the commission which was authorized by the act of 1897 to create, by purchase of lands, three State Forestry reservations of not less than forty thousand acres each, one of which was to be located upon the head waters of each of the chief rivers of the Commonwealth, namely, the Delaware, the Susquehanna and the Ohio.

It was reserved for the legislature of 1899 to take the final step which gave direction and dignity to the forest policy of Pennsylvania by creating a separate department of Forestry, the equal in standing with the department of State or the department of Public Instruction. No other State has so completely recognized the importance of the forestry movement. Even the general government has been unable to free forestry from other entangling alliances.

In some respects the State of New York is in advance of Pennsylvania in her forestry work. For example, her reservations are several times larger than those of our State and she has in prosperous operation a college of forestry at Cornell university. But on the other hand there are greater possibilities in store for Pennsylvania, because the act of February 25, 1901, which created the department of Forestry, placed it and the State reservations in the hands of a commission with almost unlimited power to act in the direction of progress, and only limiting that commission in its power to work an injury. For example, the New York authorities are prevented from undertaking any general lumbering on the lands of the State, though it would be clearly to the benefit of the forests themselves if this could be allowed. The Pennsylvania forest authorities may cut timber, or lease the right to cut it. Or they may, under certain restrictions, lease land to other parties for mining purposes. They may appoint the necessary force to do any necessary work.

It is but fair to say here that from the time of Governor Hartranft down, each succeeding Governor, regardless of his political affiliations, has recognized more clearly how important this forestry work is to the Commonwealth and each one has given it the weight of his favorable consideration and influence. This surely was to have been expected in a State which in 1880 stood second in its lumber production, and whose output for that year was 1,733,844,000 feet, board measure, whose forest products for the same period were worth $22,457,359, and to obtain which $2,918,459 were paid to the laborers of the State.

The most serious problem left us is that of forest fires. It is certain, however, that these will become less frequent and less serious as the growing public sentiment crystallizes against those who create them. Natural forces alone would reforest the State in time, if these fires were stopped. It does not follow, however, that the crop so produced would come as promptly, or be so desirable, as if nature were assisted by scientific forestry.

In conclusion we may claim that the forestry cause in Pennsylvania is practically won. The movement has gone too far to be abandoned. It has taken too deep hold upon the public to be neglected. The healthfulness of its growth and the measure of its usefulness will depend mainly upon the honesty and intelligence of those who are placed at the head of the work.

CHAPTER VIII.

THE PLANTING OF THE CITIES[1]

IT has been said that the early settlement of the interior localities of the States east of the Mississippi was due largely to the construction and operation of canals and railroads, and that the subsequent chartered cities were the natural result of these internal improvements. To a limited extent this statement is true regarding the cities of Pennsylvania, and when it is understood that the major portion of them have attained their corporate character within the last half century, it will be seen that other causes than the opening of canals and railroads have been controlling factors in establishing municipalities and centers of importance in this great Commonwealth. That canals and railroads, State highways and turnpike companies have done much to populate the interior regions of the State is unquestioned, yet the chief cause of establishing commercial and manufacturing cities has been the development of the natural resources with which Pennsylvania is more abundantly provided than any other State in the east, and nearly all of which have been brought into their most systematic operation and made a part of business life within the last fifty years. Deposits of iron and coal were known to exist in certain localities for more than a century ago, but their production for the markets did not really begin until many years later; and oil and gas in vast quantities are discoveries of the last fifty years.

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[1] In explanation of that which is written in this chapter relating to the "Planting" of the cities, it is proper to state that it is not the purpose of the article to enter into a detailed narrative history of each of these cities from beginning to end, but rather to furnish the reader with a brief account of their origin, the events leading to their incorporation, and, incidentally, to trace something of their subsequent growth.

As early as 1790, in view of the fact that in that year 150,000 bushels of grain were transported down the Susquehanna river and thence to Philadelphia markets, it was proposed to open a navigable water way from the city just mentioned to Presque Isle on Lake Erie, utilizing the waters of the Schuylkill, Swatara creek, the West Branch of the Susquehanna, the Sinnamahoning and Conewango rivers. This proposed measure stimulated similar action for the benefit of the south part of the State and resulted in a survey for another water way between the same termini by utilizing the waters of the Schuylkill, Swatara creek, the Susquehanna, Juniata, Conemaugh and Allegheny rivers, and other smaller streams, and connecting them all with navigable canals. In 1791 still further canal legislation was proposed, and while none of the projected schemes was immediately carried into effect, the discussion of the period influenced settlement in the localities sought to be affected and accomplished much good in developing the resources of the State as then known, but no cities were founded until after the beginning of the Nineteenth Century. In the course of time several lines of canals were opened, and some of them still are in operation, but it was not until after the construction of railroads, the production of iron and coal, and the establishment of large manufacturing enterprises that the interior towns began to assume the dignity and character of cities.

Returning from this digression to the proper subject of this chapter, naturally attention must first be directed to the great metropolis of the Commonwealth, the oldest city, third in point of population among the cities of America and in many respects the equal of any of them. The city of Philadelphia was founded in 1682 by the direction of William Penn, who particularly instructed the commissioners who laid it out to establish a "green country town," with ample space around every house. The town was planted on the Delaware river, and between that stream and the Schuylkill, in a locality which bore few evidences of previous Indian occupancy, although further north and west the natives were found in tribal villages. With these dusky inhabitants the deputy, Governor Markham, and his followers sought to establish relations of friendship, and at their hands received many favors. English settlers in numbers first arrived in the town in 1681, and there is evidence tending to show still earlier occupancy of the locality as part of the colony of New York. Penn himself prepared the charter in 1701, and this was continued in force until the Revolution. In 1789 the legislature granted a new charter, which in subsequent years was frequently amended and modified by supplemental acts necessitated by constant growth and increase in commercial importance. In 1854 the "consolidation act" was passed and the city was made to include the entire county. By that act the municipal districts of Southwark, Northern Liberties, Moyamensing, Spring Garden, Kensington, West Philadelphia, Penn, Richmond, and the several boroughs and townships, lost their identity and were merged in the greater city.

Under the present laws Philadelphia is the only city of the "first class" in the State. The act of classification was passed May 23, 1874, as a conformity to the constitution of 1873. Under the act cities of the first-class included only those of more than 300,000 inhabitants, and under the amendatory act of 1889 (May 8) the minimum population in cities of the first class was increased to 600,000. In 1790 the population of Philadelphia was 28,522; 1800, 41,220; 1810, 53,722; 1820, 63,802; 1840, 93,665; 1880, 847,170; 1890, 1,046,964; and in 1900, 1,293,697.

These figures from the census reports furnish an idea of the constant growth of the city, but it may be said that Philadelphia has not been merely an accumulator of population and interests where there was no thought of the higher aims and requirements of human existence, for more than a century ago there were many evidences of pursuits belonging to a higher life. Indeed, the founder himself previous to his departure from England had declared his purpose to lay out a plot of ground "for a large town or city," and it was named from a Greek word which signified brotherly love.

Penn's time was ended with the dissolution of the proprietary as an element of civil government, yet the modern city of the Twentieth Century owes much to his wise forethought and generous provision in laying out thoroughfares of ample width. Of the institutions founded by him and by his successors there can be no mention in this place, yet in the city to-day there is much which reflects the men and the times in which the proprietor governed the town. It cannot be inferred from this that the city is in any sense non-progressive, for its scheme of government, its institutions of every kind, and its commercial interests are in quality and kind equal to those of any city in the world.

Reading in 1840 From an old print

At the confluence of Allegheny and Monongahela rivers, on the rich alluvial bottom lands which almost a century and a half ago attracted the attention of a mixed population of Englishmen, Germans and Scotch-Irish, now stands the great industrial city of Pittsburg, a city of three hundred and fifty thousand[1] inhabitants whose energies are devoted to manufacturing enterprises and the other vast interests which naturally are associated with industrial pursuits. As a manufacturing center Pittsburg has enjoyed an enviable reputation for more than fifty years, but it cannot be claimed that the founders of the earliest enterprises in the city ever dreamed that their pioneer efforts would lead to the establishment of one of the greatest producing centers in the world.

Well authenticated record says that the region around Pittsburg was first explored with a view to settlement as early as 1748, by a colony of Englishmen from Virginia, who believed the lands of the locality were a part of the territory of that colony, and that a contention arose respecting the conflicting claims, but that the near approach of an outbreak between the English and French for a time put an end to the controversy. During that war the locality was the scene of important events, among which was the memorable battle in which Braddock met with disastrous defeat and his men were only saved from almost total annihilation by the timely action of Washington.

But it is not of these things that we would write in this brief sketch. Within a few years after the close of the last French and English war a settlement was planted on the city site. In its civil history Pittsburg dates from about the year 1765. It then was a part of Westmoreland county and made little progress until 1788, when it became the seat of justice of the new county of Allegheny. At that time and for several years previous thereto, its inhabitants were chiefly Scotch-Irish, and in their domestic life there was little to attract settlement to the town; but after the location of the county buildings a new element of population appeared and a new order of things was established. So rapid, indeed, was the development of the place during the next four years that a borough incorporation was effected in 1794 (April 22), and a little more than twenty years later—March 18, 1816—the borough became a chartered city. At that time its business interests were such as were usual to any county seat, it was without manufactures of any consequence, yet its importance as a center of river traffic was known throughout the State and even beyond the boundaries of the Commonwealth.

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[1] The act of 1874 provided that all cities under 300,000 and exceeding 100,000 population should belong to the second class, and in 1889 the minimum of first class cities was fixed at 600,000. The State now has three cities of the second class—Pittsburg, Allegheny and Scranton. Pittsburg had acquired 300,000 population previous to 1900, and between 1890 and that year increased nearly 83,000 inhabitants.

The formative period of Pittsburg history virtually ended with the completion of the State canal, and from that time its growth and development have been steady and at times rapid. Previous to 1840 the city gained the pleasant distinction of being the "metropolis of the West," and was to this State as was Buffalo to the State of New York. This prestige never has been surrendered, but all its early importance has been retained and vastly increased until to-day Pittsburg ranks with the foremost cities on this continent and with the greatest centers for the manufacture of products of iron and steel in the world. Its population in 1900 was 321,616, and in 1902 is conservatively estimated at 350,000.

On the north side of Allegheny river, opposite Pittsburg, is the city of Allegheny, the residence locality of many prominent business and professional men of the greater municipality. In its individual history Allegheny dates back to the early years of the last century, and in its relation to the history of the State during the colonial period the region was the scene of many important events which are narrated in another part of this work. When Pittsburg began to take rank with the manufacturing, mining and railroad centers of the country, many of its wealthy business and professional men established splendid residences across the river, and thus Allegheny became noted as a "city of homes" in Pennsylvania. Even before this time, however, several prominent institutions of learning had been founded here, and in later years the acquisition of others gave the locality a special standing and added materially to its population and wealth. For many years it has been known as a city of art, education, culture and refinement.

Allegheny became a borough April 14, 1828, and was granted a city charter April 13, 1840. From that time its growth has been continuous and healthful, and it ranks third in population among the cities of the State, being second only to Philadelphia and Pittsburg. In 1880 the inhabitants numbered 78,682 and in 1900 the number had increased to 129,896.

About sixty years ago a faithful chronicler of Pennsylvania history, in treating of the boroughs of Luzerne county, made incidental mention of the fact that there were several pleasant villages and hamlets in the locality, but at that time there appears to have been no evidence of municipal life in the vicinity of the splendid modern city of Scranton, now fourth in point of population in the State and in the very front rank among the coal producing, railroad and manufacturing cities of the country. Previous to 1840 this locality was not more than a sparsely settled farming section of indifferent quality, and was known by the Indian name of Capouse. Settlement is said to have begun in the region as early as 1788 by Philip Abbott, who built a cabin, also a saw mill, and made some attempt at clearing the land. Soon afterward other settlements were made and the locality took the name of Slocum Hollow, in allusion to one of its families, but not until 1840 did the place begin to show signs of life and future growth. About this time it took the name of Harrison and later on was changed to Lackawanna Iron-Works, from the establishment there of the mills for the manufacture of iron and its various products. Soon afterward there came into the life of the town, which had been laid out in 1840, three men—Col. George W., Selden T. and Joseph Scranton—who were the real founders of the city, and for whom it was first named Scrantonia and afterward Scranton. Thus it appears that the present city had its beginning in the iron works and that the greater industry of mining and shipping of coal to markets was a later acquisition. This came with the construction of railroads across the State, and when the great outlet to the northward into New York State was furnished Scranton took rank with the best coal producing and iron manufacturing cities of the land. The extension of the now known Lackawanna railroad and its operation as a trunk line between New York city and Buffalo was of the greatest benefit to all local interests and since that time the growth of the city in every direction has indeed been remarkable. It is chiefly noted as a mining, manufacturing and railroad center, and as such compares with the best cities in the country, in this State standing second only to Pittsburg.

In 1866 (act of April 23) the borough became a chartered city of Luzerne county. In 1878 the welfare of interests in the locality necessitated the creation of a new county, and Lackawanna county was the result, with the seat of justice at Scranton. In 1880 the population of the city was 78,682, and of the county, 139,447. In 1900 the city contained 102,026, and the county 159,241 inhabitants.

Over in the picturesque valley of the Schuylkill, nearly sixty miles from Philadelphia and a little less distant from Harrisburg, in a region early known to the colonists under the Penn proprietary and previously a favorite resort of the Indians, is situated the prosperous city of Reading with a population of more than eighty thousand inhabitants. When Penn opened the doors of immigration to various peoples of Europe many sects of Protestants gladly accepted the invitation and embarked for America, that they might be freed from the religious persecutions to which they were subjected in the mother country. They were chiefly Germans of various "ranks, sects and persuasions," and they settled throughout the interior regions of Pennsylvania, many of

Independence Hall, Philadelphia, Restored

them in Berks county on the site whereon was soon founded the borough of Reading.

The lands on which the city in part was planted were first purchased as early as 1733 by John and Samuel Finney, whose possessions embraced about 450 acres; afterward when the Proprietary sought to lay out a town site the owners refused to part with their title, thus delaying that action for several years, although it was finally accomplished. The Penns named their town Reading, the county Berks, both in allusion to English town and county names, and when the borough streets were laid out they were likewise named after distinguished English titles and various members of the Penn family or Proprietary. The county was set off from Philadelphia, Chester and Lancaster, and Reading was made the shire town in 1752. The town itself was laid out in 1748.

In the colonial history of the State, Reading was the scene of many important events, and its people enjoyed few of the blessings of peace until after the close of the Revolution. In its early history the Friends, who also had planted a colony in that part of the valley, were controlling factors and affairs of government were left in their charge, while the Germans devoted themselves to agricultural pursuits. They established comfortable homes for their families and in later years their descendants have been recognized as a part of the substantial element of the city's population and life.

Reading was incorporated as a borough in 1783 (September 12) and its plan of government was reorganized in 1813 (March 29). In 1840 it was the largest borough in the State, having 8,392 inhabitants. It became a chartered city March 16, 1847, and under the classification act[1] of 1889 it ranks as the largest city of the third class in Pennsylvania. The development of manufacturing resources in Reading was begun in 1836, and within the next five years its industries included at least five extensive iron, wood and brass works in addition to a locomotive and railroad machine shop. As a station on the line of the old Schuylkill and Union canals its importance as a center of trade early became apparent, and when in 1842 the Philadelphia, Reading and Pottsville railroad was completed the future growth and prosperity of the city was assured. Since that time railroad interests have steadily increased and the city is regarded as a place of much importance from an industrial standpoint. According to the federal census of 1880 the population was 43,278, and in 1900 had increased to 78,961.

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[1] Under the act of May 8, 1889, all cities having less than 100,000 inhabitants are cities of the third class.

About the middle of the eighteenth century, when the English and the French were struggling for the mastery on this side of the Atlantic, the latter power through the offices of its Jesuit missionaries succeeded in establishing terms of friendship with the fierce Seneca warriors of the Iroquois confederacy, and were permitted to construct a line of fortifications from the French stronghold in Canada to the Mississippi river, extending across the territory of Pennsylvania from northeast to southwest, and thus forming a "bow," of which the English colonies were the "string." In 1726 the French built Fort Niagara and about twenty-three years later, probably in 1749, erected Forte de la Presque isle (Presque Isle) on the bluff overlooking the bay and the waters of Lake Erie. This fortress stood on the site of the present industrial city of Erie, the latter the most important municipality in northwestern Pennsylvania, and with whose early life there are associated numerous interesting and historic memories.

After the overthrow of the French power in 1763, the close of the Revolution in 1783, and the adjustment of Indian disturbances which had retarded settlement in this region, there came a steady stream of Yankees from New England and New York, with a few adventurous Pennsylvanians, and all together they occupied and developed the fertile lands with a degree of energy almost unparalleled in the early history of the State. Before the questions of land titles and boundary lines had been fully settled, the tide of settlement had begun, and as early as 1795 the town was laid out; and it was named Erie, in allusion to the lake on whose waters it was planted, while the lake derived its name from the tribe of Indians who inhabited its southern shores and who were destroyed by the Iroquois about the middle of the seventeenth century.

In the clamor for lands in this locality there was some confusion, but the determined action of Gen. Irvine and Andrew Ellicott, who laid out the town, prevented anything that savored of disorder. It will be remembered that when the commissioners were surveying the proposed boundary between New York and Pennsylvania, it was discovered that the line must fall upon Lake Erie in such a manner that the latter State would own not more than four or five miles of shore front and that without a respectable harbor. Then followed negotiations which led to the acquisition of the "triangle" and the land whereon now stands the city of Erie, which otherwise must have fallen within the State of New York. These lands were the subject of controversy between Massachusetts and New York, and in settlement thereof were ceded to the general government, through which source Pennsylvania acquired title to the more than 202,000 acres comprised in the triangle.

In laying out the town the commissioners reserved certain lots for the use of the United States for "forts, magazines, arsenals and dock yards," which action more than any other cause attracted the attention of settlers and land operators and resulted in a borough incorporation in 1805. At that time the place contained about one hundred dwellings and was the temporary home of several distinguished military and naval officers. An academy was founded in 1811, and two years later Captain (afterward Commodore) Perry came here to build the naval fleet with which he vanquished the British squadron in the memorable battle of September, 1813, an important event in American history and one with which the city of Erie always has been prominently associated.

For many years a port of entry on the lake front of the State on the west, naturally many commercial interests were centered here, and when the canal leading to Beaver was put in operation the place acquired additional importance. Then followed the construction of various lines of railroad, which so increased the local population that the borough became a city, the act therefor having been approved April 14, 1851. In more recent years the city has become noted for its manufactures, its commerce, its railroad trade and the substantial character of its institutions. As tending to show its remarkable growth it may be stated that in 1820 the population was only 617, and in the next twenty years had increased to 3,412. In 1880 the city's population was 27,737 and in 1900 was 52,733.

In the central northeastern part of Pennsylvania, in the very heart of the vast anthracite coal fields, on the south side of the Susquehanna river, is located the metropolitan city of Wilkes-Barré, the seat of justice of Luzerne county. The earliest white settlers in this region were men from Connecticut, and Germans and Scotch-Irish from the southern counties of this State, and there was little friendship existing among them, as the Connecticut colonists claimed title under grants from their province, while the Germans and Scotch-Irish held possession under the Pennsylvania claim. Frequently these adverse claimants became involved in actual strife, and during the period of the dispute there was little progress in the direction of development. Another element of discontent in the region was the unfriendly attitude of the Indians inhabiting this part of the Susquehanna valley, who were a source of annoyance and anxiety to the whites until after the close of the Revolution. A narrative of all these events, however interesting, can have no place in this chapter, but it is unquestioned that the troubles growing out of conflicting titles and the hostility of the Indians had the effect to delay permanent settlement in the locality for nearly half a century. After Gen. Sullivan's avenging army had swept the red men from the valley (1779) there came an era of peace and prosperity, and within the next ten years the entire region became populated with a sturdy, determined class of settlers. However, several years before this, as early as 1768 or '69, Obadiah Gore, a blacksmith, had discovered that the coal found on the sight of what now is Wilkes-Barré was far better than charcoal in making forged nails, and also that it answered "very well" for purposes of fuel. The discovery and use of coal in this region led to the ultimate founding of the city, yet had small part in promoting settlement previous to 1800.

The town of Wilkes-Barré was laid out in 1769, and was made a county seat upon the creation of Luzerne county in 1786. It was named in honor of John Wilkes and Isaac Barré, members of the British Parliament during the Revolution, whose friendship for the American colonies in their struggle for independence was thus remembered. The name, however, for many years was written "Wilkesbarre," occasionably "Wilkes Barre," but for the past 50 years, "Wilkes-Barré."

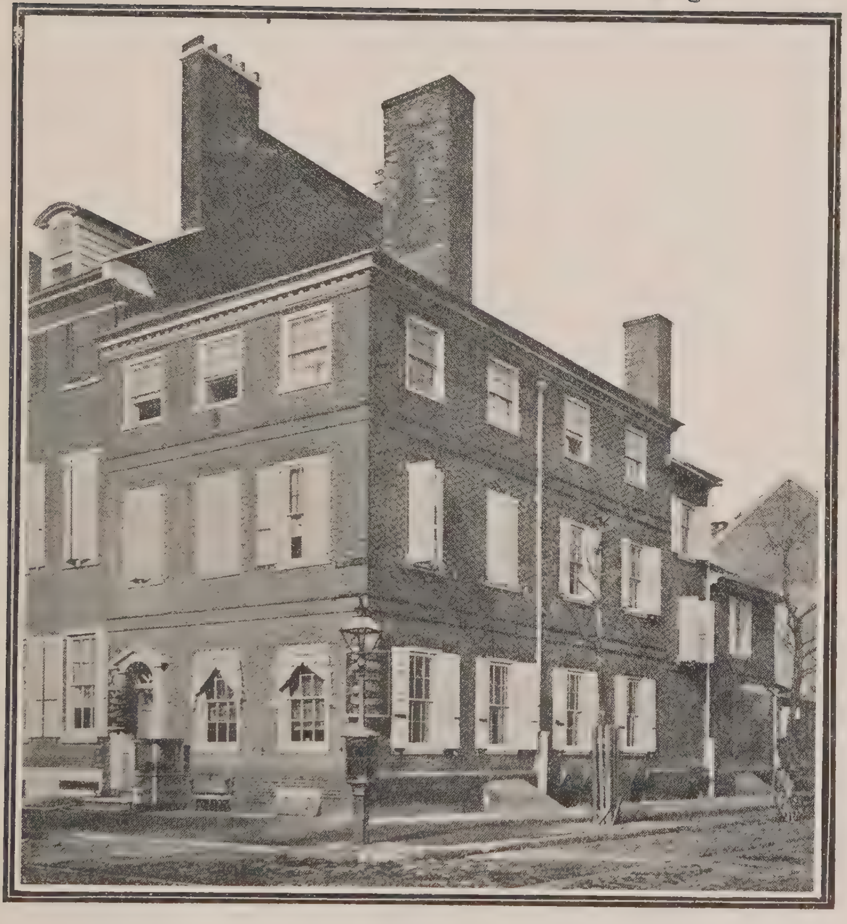
When anthracite coal began to come into general use for domestic and manufacturing purposes Wilkes-Barré became a central point for extensive mining operations and soon afterward gained prominence as an iron manufacturing borough. About 1840 the place contained one of the largest rolling mills in the country and had a line of railroad over the mountain eastward to the Lehigh river, thus furnishing an outlet for manufactured products and the limited quantity of coal mined by the Baltimore Coal company, whose lands were about two and one-half miles from the borough proper. At that time the borough population was 1,718.

This condition of municipal life did not long continue, as the demand for coal soon necessitated the construction of other lines of railroad, the opening of new mines, and the establishment of new industries at home, where fuel was abundant and cheap. With these acquisitions there came increased population, an outspreading of interests, and the establishment of new institutions, followed by an act of the legislature (passed May 4, 1871) incorporating the city. From that time the growth of the city has been continuous, and to-day it ranks with the most progressive municipalities of the State. In 1880 the population was 23,339, and in 1900 had increased to 51,721.

The story of the early history of the capital city of the State reads like a well woven tale of fiction rather than a dry narrative of events relating to the founding of a town. If local tradition be true, and no man doubts the accuracy of the story, John Harris must have been endowed with prophetic gifts when in laying out the town of Harris' Ferry he declared that it would some day be "the seat of government of Pennsylvania." The founder himself evidently spoke in all sincerity, for he then conveyed to the commissioners four acres of land on Capitol hill "in trust for public use and such public purposes as the Legislature shall hereafter direct." This was in 1785; John Harris died in 1791, and Harrisburg was not made the capital of the State until 1810.

Almost without interruption for nearly two centuries the surname Harris has been associated with the history of this locality. The pioneer of the valley region here was John Harris, senior, a Yorkshire Englishman, who emigrated to America and settled in Philadelphia, where he married. He removed first to Chester county, thence to the mouth of Conoy creek on the Susquehanna, in Lancaster county, and afterward to the site of Harrisburg, where he subsequently lived and died. At this place, about 1726, his son, John Harris, was born. He was the founder of the town, an extensive land owner, an enterprising developer, and is said to have been the first white child born in the State west of the Conewago hills.

The elder Harris was an Indian trader and soon succeeded in establishing friendly and profitable relations with the dusky in-



"Fort" Rittenhouse, northwest corner 7th and Arch streets, Philadelphia

Erected, 1786-1787; demolished, 1886; residence of David Rittenhouse. Negative by J. F. Sachse

habitants of the valley. He acquired much land and also engaged in agricultural pursuits; and he is said to have brought the first plow into the Susquehanna valley in this State. He died in 1748, upon which the younger John succeeded to the parental estates, comprising several hundred acres upon which the city in part stands, and he also traded with the Indians, carried on large farming properties, and in addition thereto opened the way for white settlement in the locality. Among his other enterprises he established a ferry across the river, and in its time "Harris' Ferry" was a place of note and importance. The county was created in 1785 and the seat of justice was established at the Ferry, the name of which was changed to Harrisburg[1] in the same year.

These things being accomplished, new factors came into the town life and soon a prosperous village settlement was brought into existence with productive farming areas surorunding it on all sides. In the subsequent history of the town there were few events of importance previous to the designation of Harrisburg as the capital of the Commonwealth, but this event the founder himself did not live to witness; he died in 1791, and his coworkers carried forward the task of building up the borough and later city. The borough was incorporated February 1, 1808, and after the location of the State buildings the growth in interests and population was more rapid. In 1830 the borough contained 4,307 inhabitants. In later years the construction of canals and various lines of railroad brought increased population, and with the establishment of public institutions the importance of the city became recognized throughout the State. The act of city incorporation was passed March 19, 1860. In 1880 the city's population was 30,762; in 1900 it was 50,167. It is known as one of the most desirable residence cities in Pennsylvania, is recognized as a railroad center of large importance, and also enjoys prominence on account of its diversity of manufactures.

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[1] One account says that at the August sessions in 1786 the name of the town was changed from Harris' Ferry to Louisburg, by "order of the Supreme Executive Council." The injustice of this action became apparent, but the new name was allowed to remain until the borough was incorporated.

Lancaster, the oldest city, except Philadelphia, in Pennsylvania, is the seat of justice of a county noted not alone for its wealth of history, but also for its wealth of natural resources. In the early history of the Commonwealth the region comprising Lancaster was the scene of many important events and the abiding place of men of distinction in the political affairs of the State and nation. Here on frequent occasions were held the councils between chiefs and sachems of the Six Nations and the commissioners representing various proprietary governments, and Penn himself is said to have at least once visited the Conestoga Indians here and treated with them in the interests of peace and the acquisition of lands. Then there were the faithful laborers whose mission was to spread the gospel among the savages. In itself the Indian history of this region is of special interest and sufficient to fill a volume, but the present narrative must treat of other events.

Beaver in 1840 From an old print

Penn opened this territory for white settlement on the broad principles of toleration, and in response to his invitation there came here many parties of various religious sects from the upper province of Germany, and added to the number were others from the eastern counties of this province and also from northern Maryland. The tide of settlement began about 1700 and continued until the lands were well occupied. The county was set off from Chester in 1729, and the county buildings were temporarily erected at Postlethwaite. This proved unsatisfactory to many of the settlers, and in 1730 the Governor laid out the town of Lancaster, which in 1734 became the seat of justice of the county. The town site was admirably chosen, its streets were laid out uniformly and were named in accordance with the prevailing custom of the period. In later years the place continued to grow both in population and commercial importance, and while there had been some attempt at manufacture, the disturbing period of the French and Indian wars, as well as of the Revolution which followed, delayed determined effort in that direction. Even to the early settlers iron ore was known to abound in the region, and in 1726 an iron works was in operation.

For many years the Susquehanna river on the western border of the county was the chief avenue of travel and traffic, and vast quantities of produce and manufactured wares were thereby annually transported to Baltimore and Philadelphia markets. In 1792 a turnpike road was laid out from Philadelphia to Lancaster, and was opened in 1794. This road, about sixty-two miles in length, was first paved with stone and afterward was macadamized, and is said to have been the first highway of its kind in the country. It became the recognized thoroughfare of travel between the points mentioned and was an important factor in Lancaster history. In 1828 the Conestoga was made navigable from Lancaster to the Susquehanna, and thus the city was given water-route connection with profitable markets.

These and other internal improvements determined the future progress of the town. Franklin college had been founded here in 1787, and in 1818 (March 20) the borough was incorporated as a city. After 1828 the population increased more rapidly and several new manufacturing industries were located here.

The first railroad from Columbia to Philadelphia was opened in 1834, its route passing through Lancaster. The operation of this road, together with the work accomplished in 1829 by the Conestoga Navigation company, were principal factors in establishing Lancaster as an industrial city. It early gained an enviable standing in business circles and none of its old-time prestige has been lost in later years. More than this, Lancaster has long been known as the home of distinguished men. Governor James Hamilton was the founder of the town, and Edward Shippen, his confidential agent, possessed much influence with the proprietary government. Joseph Shippen, son of Edward, was secretary to the governor and council; the distinguished Dr. Eberle, once a conspicuous figure in Philadelphia medical circles, was a native, and John C. Calhoun and James Buchanan were at one time residents in the county. Robert Fulton, inventor of the steamboat, was born of Irish parents in Little Britain township. In 1800 Lancaster contained 4,292 inhabitants and 8,417 in 1840. In 1880 the population was 25,769, and in 1890 was 41,459.

On the eastern slope of the Alleghany mountains, not far from the geographical center of what now is Blair county, something more than half a century ago the Pennsylvania Railroad company established a station on what once was a part of David Robeson's farm. There appears to have been something in the location here to attract attention, and very soon afterward the company's agents secured a tract of more than one hundred and twenty acres of land, and at once proceeded to erect construction and repair shops. Then the flourishing borough of Altoona sprang into existence and ranked with the most important railroad towns in the State. After a time the company erected a hotel, named it the Logan house, and otherwise contributed to the growth and prosperity of the place to such an extent that the name of Altoona became known throughout the country. This enterprise on the part of the company stimulated industrial activity generally, and soon the little borough became recognized as a manufacturing town. In importance and population it soon outstripped the county seat, and became the metropolis of Blair county, and frequently in later years has been mentioned as the "Mountain City." Its location is delightful and all its surroundings are conducive to health.

Altoona was incorporated as a city April 3, 1867, having been in existence less than twenty years. It derives its prominence from the railroad interests centered there, and is one of the few purely railroad cities in the State. In 1880 the population was 19,710 and in 1900 had increased to 38,937.

Crossing the main range of the Alleghanies from Blair county into Cambria and thence following the line of the Pennsylvania railroad to the extreme southwest corner of the latter county, the traveler arrives at the prosperous city of Johnstown—a city planted less than half a century ago, yet one which has increased rapidly, despite two awful disasters which cost hundreds of lives and millions of dollars in loss of property.

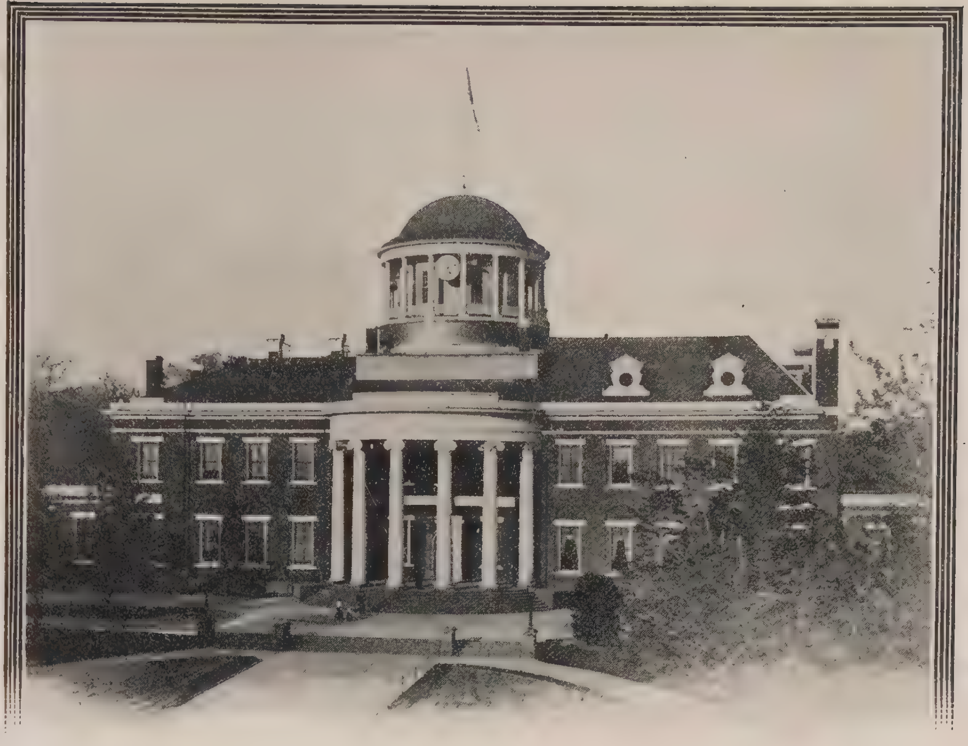
By reason of its fortunate situation at the junction of Stony creek with Conemaugh river, Johnstown first attained prominence as an extensive coal mining region, but its greatest prosperity has come since the construction of two trunk lines of railroad—the Pennsylvania and the Baltimore and Ohio—both of which have been factors in increasing shipping facilities, adding to the local population, and also directly promoting industrial interests.

The city is built up on the site of the old Indian village known as Kickenapawling's town, where in later years there settled a goodly number of sturdy Germans. One Joseph Johns (or Yahns) is said to have been the pioneer settler here, his lands having been quite extensive, as also were those of Mr. Halliday, who came about the same time. Before the coal fields were opened and previous to the advent of canals and railroads, this region was noted for its lumbering interests, and when a trading center was established the locality took the name of Conemaugh and afterward, when formally laid out, of Johnstown, in allusion to the German settler whose name has been mentioned. In 1840 the borough's population was less than 1,000. In 1880 the population was 8,380, and in 1900 was 35,936, having increased more than threefold in twenty years. Johnstown was incorporated as a city of the third class December 18, 1889.

In the eastern central part of the State, on the west side of the Lehigh river, in one of the most elevated and healthful localities of the region, is situated the beautiful city of Allentown, the seat of justice of Lehigh county. In the early settlement of this part of Northampton county there was a strong element of German population, and the little hamlet built up on the highlands was one of the earliest in the region.

By reason of its situation in a region quite remote from the established routes of travel previous to the construction of canals and railroads, the development and growth of the town was slow, or, to use the words of a well known writer, "was unnoticed and unknown." As a part of the mother county the settlement was called Northampton until about 1800, when the name was changed to Allentown, and so called in honor of Chief Justice William Allen, founder of the town, a close friend of the Penn family, and whose eldest daughter, Ann Allen, married Governor John Penn. It will be seen, therefore, that the name which this beautiful city now bears was most worthily bestowed, and it perpetuates the memory of one of the most distinguished men who figured in the early history of the colony. It is said, however, that upon its designation as the seat of justice of Lehigh county in 1812, the name of Northampton was adopted, and was so continued until 1838 when the former name of Allentown was restored.

The town was laid out under the Allen proprietorship in 1751, and upon the death of the founder his son, James Allen of Philadelphia, succeeded to the ownership of the site. He died about 1782, and his estate here descended to his children, of whom there were two sons and three daughters. They maintained homes



Old State Capitol

Destroyed by fire February 2, 1897. Negative
by J. Horace McFarland

in the town and were instrumental in promoting its growth and prosperity in later years. As the surrounding country became settled Allentown began to assume the dignity and character of a prosperous borough, but not until after the advent of canals, railroads and manufacturing interests did it attain any standing in the industrial history of the State. In this respect the city has since made rapid strides and now is the seat of operation of large iron works, and enjoys a reputation as a manufacturing center, without having sacrificed any of its former popularity as a healthful and desirable residence town. In 1830 the borough contained a population of 1,544, and in 1840 had increased to 2,493. In 1880 its population was 18,063, and in 1900 was 35,416, having nearly doubled in the preceding twenty years.

Next in the order of rank and population among the cities of Pennsylvania is McKeesport, situated at the junction of the Monongahela and Youghiogheny rivers, in populous Allegheny county, where flourishing boroughs and cities have sprung into existence almost as by magic under the influence of men of enterprise who have made the region of country about Pittsburg one vast industrial center, almost without an equal in this broad land. McKeesport is distant about twelve miles from Pittsburg, is well laid in the arrangement of its streets, and is in the very heart of an extensive iron manufacturing and coal shipping section, where tens of thousands of wage earners find constant employment and comfortable homes.

Sixty years ago McKeesport contained less than four hundred inhabitants, but even then the village was noted for its large coal shipping interests, while in other pursuits there were several boat yards, steam saw mills, a woolen factory and a large steam flour mill. The greatest growth and acquisition of large enterprises have come within the last quarter of a century, when over-crowded Pittsburg has sought desirable locations near the city for manufacturing enterprises, where operatives are employed by thousands and where many acres of land are required for the proper conduct of business. Few, indeed, if any, of these vast industries are owned by McKeesport people, but by heavily capitalized corporations whose stockholders are widely scattered throughout the country. Yet the city has been built up through their enterprise and is maintained by their wealth. In 1880 McKeesport, then a borough, had 8,212 population; in 1900 the city population was 34,227. The borough became a chartered city January 15, 1891.

The site whereon now stands the city of Chester was first settled by Swedes and formed a part of the territory of New Sweden, extending from Cape Henlopen to Trenton Falls. The work of colonization was begun in 1638 and continued until the territory on both sides of the Delaware was settled. In 1655 New Sweden was conquered by the Dutch, and in 1664 the latter power was compelled to yield to the English force sent out against all the Dutch possessions in Netherland and its dependencies. It may be said, however, that the Dutch did not oppose the English with armed resistance, but submitted to the authority of the stronger power and recognized its sovereignty in the New World. Thus the Dutch were permitted to retain most of their settlements and lands. The town, which subsequently became Chester, was called by the Swedes, Upland, and it was the seat of authority until the coming of William Penn for all the white

Newtown

From an old print issued about 1840

settlements on the west side of the Delaware, from the vicinity of Wilmington north to Trenton Falls.

It will thus be seen that Chester enjoys the distinction of being the oldest town and county seat in Pennsylvania. Although he had landed at New Castle, Penn, when he came in 1682, first touched Pennsylvania soil at Chester. He was welcomed there by colonists "of all peoples, tongues and nations," chiefly Swedes, Dutch and English, who dwelt in peace and harmony. Early in December (1682) Penn called his first assembly at Chester, which continued in session three days, and passed acts for the government of "the province of Pennsylvania and the territories thereunto belonging."

From the time the town was founded to the close of the Revolution Chester figured prominently in the civil and military history of the province, but the events of that long period are matters of general rather than local history and as such are treated elsewhere in this work. On the creation of Chester county in 1682, Chester was made the county seat, and was so continued until 1786, when the public offices were removed to West Chester; not, however, without determined opposition on the part of the "old town." Delaware county was set off from Chester county in 1789, and Chester was its seat of justice from that year until 1851, when Media was made the county seat. At that time the old village, although without corporate organization, contained about one thousand inhabitants, and it was feared that the removal of the public buildings would injure the business interests of the place. However, about this time some of its enterprising citizens caused the town to be regularly laid out, and made a determined and successful effort to draw manufacturing interests to the locality. Through their endeavors several industries were established. The railroad from Philadelphia to Wilmington and Baltimore furnished access to the great markets, while the construction of docks and piers on the river afforded shipping facilities by water. A union of interests with South Chester was effected, and in the course of a few years the enlarged village began to flourish and to attract attention through its manufactures of woolen and cotton goods, and iron, and also by reason of its extensive ship yards.

In later years Chester became famous for its ship building interests, and some of the largest steamships in the ocean carrying trade were the products of its yards. The industry has somewhat declined in later years, but with the acquisition of other equally valuable enterprises has contributed to the prominence which the city now enjoys as a center of manufacture and trade. In addition to its industries Chester has been liberally provided with public institutions and its mercantile growth has increased with population and advancement in other directions. The borough became a chartered city January 17, 1890. The population in 1880 was 14,997, and in 1900 was 33,988.

The historic city of York, the seat of justice of York county, the home of the national government for nearly a year following the battle of Brandywine (September, 1777), became a county town in 1749, and an incorporated borough in 1787, yet in 1740 there was not one house on the site. Settlement in the region west of the Susquehanna and bordering Maryland on the north was begun soon after 1720 by English and Germans, the latter predominating, and a few renegades and squatters under the Baltimore titles who recognized neither treaty rights nor the claims of other owners, and who for several years were a disturbing element in the vicinity. On this point one authority says: "The early settling of York town was one continual scene of disturbance and contention; there were warring rights and clashing interests."

The lands on both sides of Codorus creek in the manor of Springettsbury, on which the town of York was laid out, were surveyed by Thomas Cookson, under the special order of the proprietaries in 1741, and the part east of Codorus was laid out in squares, after the plan adopted in Philadelphia. Then, under an unusual scheme of distribution, lots were granted by perpetual lease on compliance with specific conditions in relation to building and the payment of seven shillings annual rental; in case of failure to comply, or only partial compliance, with the conditions on the part of lease holders, the land reverted to the proprietors. This system of settlement proved very unpopular and was one of the causes of the disturbance mentioned in the preceding paragraph; and as a result of the injustices practiced under the forfeiture conditions of the lease scheme there were only forty-seven houses and three churches on the site of York in 1751. At length, however, the evil system was abandoned and in 1787 (September 27) the "Borough of York" was incorporated by act of the legislature. In 1790 its population was 2,076, and in 1800 was 2,503.

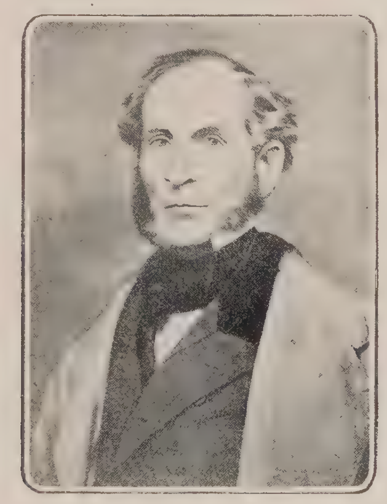
From the outbreak of the Revolution to the close of the nineteenth century, as a county town, borough and subsequent city. York has enjoyed a special prominence among the municipalities of the State, and loyalty to home institutions and measures for the general welfare has been one of the marked characteristics of its people in all generations of the past. As early as 1806 the borough was supplied with a water system for domestic purposes, and in 1833 the Codorus was made navigable to the Susquehanna river, thus affording an outlet for the products of the town. In 1838 railroad communication with Baltimore was established, and in 1839 a line of railroad was opened to Columbia, and from the latter point to Philadelphia. At a still earlier date York was provided with good turnpike roads leading to Baltimore, Gettysburg, Columbia and Harrisburg, all of which were contributing elements in the early prosperity of the town.

Naturally, these internal improvements resulted in increased population and led to the development of the resources of the town and the country adjoining it; they also led to the establishment of various industrial enterprises, which in the last half century have added much to the wealth of the locality. To-day York is known as a city of manufactures as well as of comfortable homes, and the productive agricultural country surrounding it derives material benefit from its industries and other business interests. As evidence of its growth in recent years it may be said that in 1840 the borough population was 4,779, and in 1880 was 13,940. The city charter was granted January 11, 1887. In 1890 the population was 20,793, and in 1900 had increased to 33,708.

That part of Pennsylvania which comprises the several counties bordering on and lying to the northward of the West Branch of the Susquehanna river, was first visited by Moravian missionaries between 1744 and 1746 for the purpose of spreading the gospel among the Indians, but there was no permanent occupancy of the region until after the treaty of 1768, when the Penns succeeded in extinguishing the Indian title. Previous to this time, however, and during the latter part of the French and English wars which ended in 1763, the Scotch-Irish rangers of the Kittatinny valley had more than once visited the West Branch regions and inflicted punishment upon the hostile horde whose depredations the Moravian missionaries could not prevent. Through these occasional incursions the fertile lands and splendid forests of the valley became known to the hardy Pennsylvanians, and when the country was opened for settlement they were quick to avail themselves of the offers of the proprietors. Soon after the purchase of 1768 a question concerning boundary lines gave rise to much confusion, and as no civil authority appears to have been exercised over the region, the determined settlers established their own court with "fair-play-men" in the capacity of judges; and their decisions were final, their judgment was carried into effect by the loyal support of all the settlers, and finally, when the civil government of the Commonwealth was extended over the territory the titles established by the fair-play court were recognized and confirmed.

Among the early settlers in that part of the valley which includes Lycoming county, the Scotch-Irish prevailed in numbers, and with them also were many Friends and Germans and a fair contingent of New Yorkers and New Englanders; but of whatever nation or creed, settlement was accomplished so rapidly that in 1795 a new county was set off from Northumberland and Williamsport was made its seat of justice.

The elevated lands on which the city was planted were in the most desirable portion of the valley, and although somewhat remote from the geographical center of the new county there was an important settlement and trading post in the locality where Michael Ross then lived. He conveyed to the commissioners the land for county buildings, and the town was named in allusion to his son, William Ross. The village plot was laid out in 1796, and in 1806 the hamlet was incorporated as a borough. In later years its growth was slow and previous to the opening of the West Branch canal and the construction of a railroad, there



George Whitfield Scranton

After whom Scranton was named; born 1811; died 1861 were few evidences of municipal life in the town. Mineral deposits of coal and iron were known to the early settlers, but there was little attempt at developing these resources until the canal and railroad were completed, hence for many years the chief pursuits of Williamsport residents were agriculture and lumbering.

Lumbering as an industry in this locality had its beginning about 1835, and in the next ten years the town became recognized as the greatest center of the lumber trade in the State and one of the greatest in the United States. The construction of the boom for storing logs, the erection of saw and lumber mills of unprecedented capacity, and the formation of heavily capitalized companies, added much to the business importance of the place, and contributed largely to the wealth of its people. The period of gigantic operations began about 1845 and continued more than thirty years, and thousands of substantial fortunes were the result. The city still is regarded as the center of the lumber trade, although the devastation of the forests within the last quarter of a century has lessened the volume of business. In the meantime, however, other important industries were established, and the city has long been noted for the diversity and importance of its manufactures, its extensive mercantile trade, its well kept streets, splendid residences, healthful surroundings, and the substantial character of its people and its institutions.

In 1850 the borough had a population of 1,600, yet so rapid was its subsequent growth that in 1866 (January 15) it became a chartered city. In 1880 the population was 18,934; in 1890 was 27,132 and in 1900 was 28,755.

In the early part of the nineteenth century (1802) a former resident of New Castle in Delaware emigrated to the sparsely settled regions of western Pennsylvania and took up his abode at the junction of Shenango and Neshannock rivers, in the recently organized county of Mercer. Here he laid out a town, but it may be assumed that he had no thought that the little hamlet would become the seat of justice of a populous county or the site of an industrial city. In allusion to the place from whence he came Mr. Stewart gave the name of New Castle to the settlement, and after six years of life it contained about twenty houses. In this locality the people were for many years devoted to agricultural pursuits and lumbering, and there was little to stimulate growth until the completion of the branch of the Pennsylvania canal connecting the Ohio river with Lake Erie. This was accomplished previous to 1845, and about the same time a railroad was opened through the valley. Then the little town began to show signs of industrial activity, and a blast furnace, rolling mill and nail factory were soon in operation. The discovery was made that the hills of the region contained an abundance of bituminous coal, iron ore, fire clay and quartz suitable for making glass, and it was not long before these resources were developed to the advantage of the entire community. In 1849 Lawrence county was formed from Beaver and Mercer counties, and New Castle was made the county seat. The borough became a city Feb. 25, 1869. At the present time the chief industries are furnaces, rolling and tin plate mills, and glass works. As evidence of material growth it may be said that in 1840 the population was 611; in 1880 was 8,418; in 1890 was 11,600, and in 1900 was 28,339. Few cities in the country can show more rapid or more healthful growth than the little metropolis near the border line between this State and Ohio.

On the eastern border of the State, nearly due east from the city whose planting is noted in the preceding paragraph, in a most fortunate location at the confluence of the Delaware and Lehigh rivers, is the city of Easton, created as such January 12, 1887, yet in its history dating back to the early years of the eighteenth century. Early Bucks county records show that Easton was laid out about 1737 or '38, soon after "the Indian walk," yet there does not appear to have been any permanent settlement here until the creation of Northampton county, in 1752, when this town was made the county seat. As a part of original Bucks county Easton had a prominent part in the early history of Pennsylvania, and many of the scenes and events of that period are noted in an earlier chapter of this work.

Easton began to assume the form of a well ordered municipality when the county buildings were erected, and, in 1826, upon the founding of Lafayette college, a new spirit of energy was infused among its people. In 1829 the Lehigh Slack-Water Navigation company's improvement to Mauch Chunk was completed and was followed in 1831 by the opening of the Delaware division of the Pennsylvania canal, and the completion of the Morris canal through New Jersey to New York. These improvements were valuable factors in developing the resources of the town, and similar enterprises at South Easton on the opposite side of the Lehigh still further added to local importance. For many years the borough profited by the shipment of vast quantities of anthracite coal from the upper Lehigh regions, all of which came to this place and thence were reshipped to markets in New York, Pennsylvania and New Jersey. It became a manufacturing village through the efforts of the Slack-Water Navigation company and other enterprising concerns, and about 1842 there were in operation here a large cotton factory, a rolling and nail mill, several grist and saw mills, a rifle factory, foundries and furnaces and other industries of note. The extensive farming areas of the

Lebanon in 1840 From an old print

region produced large quantities of grain, which was made into flour or shipped to other markets. In recent years the character of many industries has changed, yet Easton has not lost any of its old-time importance as a center of trade and manufacture. On the contrary all interests have been enlarged and are more diversified in character, and several railroad lines have facilitated the carrying trade.

Easton was incorporated as a borough September 23, 1789, and was reincorporated with enlarged boundaries in 1823. The city charter was granted January 12, 1887. In 1880 the population was 11,924; in 1890 was 14,481, and in 1900 was 25,238.

Over in the broad fertile valleys on the southern slope of the Blue mountains, about midway between the greater municipalities of Reading and Harrisburg, is the pretty little city of Lebanon. In this locality the earliest settlers were Scotch-Irish, but afterward they were almost wholly supplanted with Germans, whose descendants ever since have held numerical ascendency in the town and city. Lebanon as a town was laid out in 1750; became a county seat in 1816; was incorporated as a borough in 1821, and as a chartered city November 25, 1885. The town first began to attract attention upon the completion of the old turnpike leading from Philadelphia to Harrisburg by way of Norristown and Reading, and subsequently, upon the opening of the Union canal, it became a station of some consequence. On the completion of the Lebanon Valley railroad in 1857, local interests were greatly strengthened, and the gradual growing together of this borough and North Lebanon resulted in a consolidation in 1869.

Among the cities of the State Lebanon is known as a railroad and manufacturing center, contiguous to extensive coal fields and in the central portion of a productive agricultural region. The city is regularly laid out, is well provided with churches and public institutions which contribute to the well being of its citizens. In a section of the State generally well supplied with manufacturing cities, Lebanon nevertheless, has become the seat of important industrial enterprises, and has shown a steady increase in population. According to the census of 1840 there were 1,860 inhabitants in the borough proper, 1,430 in the north ward, and 2,907 in the south ward; total in Lebanon township, 6,187. In 1880 the total borough population was 8,778; in the city in 1890, 14,664, and in 1900, 17,628.

The site where now stands the city of Bradford once was a part of a heavily-timbered region, and was included in the purchase of 1768, by which the proprietors extinguished the Indian title to lands now comprising several counties in the northwest part of the State. In the lumbering operations which engaged the attention of purchasers and settlers for half a century or more, Bradford struggled along in the varying characters of logging camp, trading post and hamlet, and was finally established as a borough about 1840. It was destined, however, to a higher municipal existence and ultimately became the center of oil operations in the country. The change came suddenly, unexpectedly and without time for preparation, for there were times in Bradford's history during the "oil excitement" when the town could not house and feed the eager mass of beings who sought quick fortunes in the new fields.

So rapid indeed was the growth of the town during a few years that Bradford became entitled to the privileges of a city charter almost before its people were aware of the fact, and it has been said that the increase in permanent population in one single year was more than five thousand persons, chiefly men, while the influx of temporary residents, operators, speculators, option seekers and drillers, frequently exceeded one thousand per day. This was a remarkable era in local annals and one in which Bradford made history almost as rapidly as its people made or lost fortunes. During that period the city became noted as the oil center of the country and the transactions "on change" at times were enormous. But at length the period was past and thereafter the town became a prosperous inland city, in which general mercantile and industrial pursuits occupied the attention of its people. Bradford was made an incorporated city January 14, 1879. In 1880 its population was 9,197, in 1890 was 10,514, and in 1900 was 15,029.

In the early development of the anthracite coal fields of southern Luzerne county a railroad was extended from Wilkes-Barre toward the Lehigh river and thence over into Sugar Loaf township, in which the Hazleton Coal company had begun operations in 1836. Through the enterprise of the company Hazel township was set off in 1839, and was named in allusion to the abundant growth of hazel bushes in the vicinity. The borough of Hazleton was incorporated in 1856, and on December 4, 1891, became a chartered city. In 1890 the population was 11,872, and in 1900 was 14,230. For more than half a century Hazleton has been noted for the quality and quantity of its coal product.

Pittston, on the Susquehanna, between Wilkes-Barre and Scranton, was settled in 1790, and in 1838 contained only ten dwellings and about forty inhabitants. Coal mining was begun here before 1840 by the firm of Butler & Mallory, and thereafter was extended rapidly as the product was needed in eastern markets; and with the increase in mining operations there was a corresponding increase in population and interests, so that, in 1856, Pittston became a borough. The city charter was granted December 10, 1894. While the city is chiefly noted for its coal production, it also has a special prominence in other industrial pursuits. The population in 1890 was 10,302, and in 1900 was 12,556.

Another interesting municipality in the center of the anthracite regions of the State is Carbondale, fifth in seniority among the chartered cities of Pennsylvania and first in old Luzerne county. The city was planted in 1826 by the Delaware and Hudson Canal company, whose line of transportation extended into New York State. The operations of the company in mining and shipping coal gave the little town an early advantage over its neighbors in the Lackawanna basin and resulted in such rapid growth that on March 15, 1851, the borough became an incorporated city. In later years the full development of resources in the region has given other municipalities greater population and more diversified interests, yet Carbondale always has maintained its early prominence as a center of coal trade, and likewise has enjoyed an excellent reputation as a manufacturing city. The construction of the Delaware and Hudson railroad and also of the Jefferson branch of the Erie railroad have been factors in the prosperity of the city.

In 1878, when Luzerne county was divided and Lackawanna county was created, Carbondale was included in the new jurisdiction, but the buildings went to Scranton, the latter being more central and also more populous. In 1840 Carbondale is said to have produced about eight or nine hundred tons of coal daily, and to have employed about three hundred men in the mines, which then was regarded as remarkable, but when compared with the present daily product or number of mining employés the above figures are quite insignificant. In 1840 the population of Carbondale was 2,398 in both town and township. The population of the city was 7,714 in 1880, and 13,536 in 1900.

A little more than sixty years ago a newspaper published in Franklin, Venango county, contained the following interesting information. "The Seneca oil from the oil springs on Oil creek was used by the Seneca Indians as an unguent, and in their religious worship. It is almost as celebrated as the far-famed naphtha of the Caspian sea. With it the Senecas mixed their war-paint, which gave them a hideous glistening appearance, and added great permanency to the paint, as it rendered it impervious to water." Another writer commenting on the natural features of the locality said: "There are several natural curiosities in the county, the most remarkable of which is the peculiarly inflammable oil found floating on the surface of Oil creek."

From these statements it is quite evident that the inhabitants of the picturesque valley of Oil creek had not the remotest idea that their locality contained that which in later years was regarded as one of the most remarkable discoveries of the Nineteenth Century, and one which in its subsequent wide development has added more to the wealth of individuals than all previous discoveries combined, and also has been the direct means of founding numerous important cities, boroughs and towns within the Commonwealth.

James Gillispie Blaine's Birthplace, West Brownsville

Mr. Blaine was born 1830; died 1893

The locality in which busy Oil City is situated was first settled about 1803, yet on the site previous to 1859 there were only three houses. The era of real development began with the operations of Michigan Rock Oil company, about 1859-60, soon after the famous "Drake well" had gushed forth its great volume of petroleum. In 1861 the town gave signs of municipal activity and in 1862 was incorporated as a borough. In 1863 Laytonia and Imperial city were laid out, and were consolidated as Venango City in 1866. In 1871 (March 11), Oil City and Venango City were consolidated and incorporated under the name of Oil City—the name of a city now known throughout the country as the center of oil shipping interests in Pennsylvania, and also as a railroad point of more than ordinary note. The early history of oil producing in this locality is deeply interesting and the city is directly the result of oil discovery and development, but the subject is treated at greater length in another chapter of this work. In 1880 Oil City contained 7,315 inhabitants; in 1890 the population was 10,932, and in 1900 was 13,254.

Meadville, the seat of justice of Crawford county, frequently mentioned by cotemporary writers as a city of wealth, education and refinement, is situated on French and Cassawaga creeks, on the main line of the Erie railroad, and is distant from Erie city about thirty-seven miles and from Pittsburg about ninety miles. Although adjacent to the rich oil fields of the western part of the State and deriving direct benefit therefrom, it nevertheless lies outside the "oil belt." In industrial pursuits its interests are chiefly those relating to railroad enterprises and varied manufactures.

Meadville was named in allusion to David and John Mead, who left their former abode in the Wyoming valley and located on French creek in 1787. The town site was laid out in 1790, and was enlarged in 1805, the place having been made the county seat of Crawford county in 1800. In 1805 Meadville academy was founded, and in 1815 the first measures were adopted which led to the establishment of Allegheny college. This was the beginning of the city's prominence as a seat of educational institutions. A State arsenal was erected in 1816, which added materially to local interests. Here, too, for many years was the office of the Holland land company, and a principal station on the line of the State canal between Erie and Pittsburg. The first "straw paper" in the country is said to have been made here, while the Crawford Messenger, one of the oldest newspapers in the western part of the State, was established in Meadville in 1803.

Throughout the period of its history Meadville has advanced steadily, but never rapidly except in the years immediately following the construction of the first line of railroad. It was incorporated as a city February 15, 1866. In 1840 its population was 1,319, and in 1880 had increased to 8,860. In 1900 the city contained 10,291 inhabitants.

Next to Meadville in point of population, but of equal importance in business and industrial activity, and in some respects a rival city, is Titusville, in the southeast corner of Crawford county, on Oil creek and within a short distance from the point where in 1850 the Drake well first disclosed the secret of mother earth's vast stores of petroleum. In its history Titusville dates back hardly more than three-score years, and by early writers is mentioned as a small village in an agricultural region in Oil creek valley. In fact the city dates its material history from 1859, and within five years next following the success of the Drake well experiment it acquired far greater population than was necessary to gain a charter; but at that time the inhabitants were occupied with personal concerns in the rush and bustle that descended like a whirlwind upon the town. Then there were neither railroads nor other convenient means of travel up and down the valley, yet from all directions there poured into the place a constant stream of humanity which overtaxed its capacity and gave it a city's population at least five years before the charter was asked for. This was done in 1866 (February 28), when the fixed population was about five thousand, although the number of temporary inhabitants gave the place an apparent population of more than fifteen thousand.

Thus was planted what is now a prosperous and well-ordered city, supplied with all the requisites of municipal life and with industries of much importance. The period of oil excitement long ago passed into history; fire and flood have swept down the valley at great cost of property and life, yet the new city built up on the ruins is of better and more permanent character. In the main production many fortunes have been gained and more have been lost, yet to-day Titusville is a city of wealth and progress. Its population in 1880 was 9,046, and in 1900 was 8,244. This decrease does not portend continued decline and is only the disappearance of that which is of little consequence in the public welfare.

In 1789 the legislature ordered that not more than three thousand acres of State lands on Allegheny river near the mouth of French creek be surveyed and set apart for the military uses of the Commonwealth. Two years previous to that time a company of federal troops had built Fort Franklin on the site where now is the city of Franklin, but there was no intention on the part of the general government to found a town, although that appears to have been done in 1795 by commissioners Gen. Irvine and Andrew Ellicott in connection with their work of laying out the old Waterford turnpike and the towns of Waterford and Erie.

Venango county was set off from Allegheny and Lycoming in 1800, and Franklin was designated the seat of justice. The first permanent settler here is said to have been William Connolly, who assisted in erecting the barracks in 1787, and in 1793 brought a stock of goods and set up as an Indian trader. As a trading post on the usual route of travel between Lake Erie and the southern and eastern portions of the State, Franklin early attracted settlers, and with the acquisition of the county buildings its number of families steadily increased. It was incorporated as a borough in 1828, and upon the completion of improvements by the French Creek Canal and Slackwater Navigation company, about 1843, it early gained prominence as a shipping port. In 1840 the borough population was about six hundred, but increased rapidly after the first railroad was opened, and especially

Home of the Historical Society of Pennsylvania

Thirteenth and Locust streets, Philadelphia

after the production of oil in the vicinity. The city charter was granted in 1868 (April 4), since which time there has been a steady growth in population and industrial importance. In 1880 the number of inhabitants was 5,010, and in 1900, 7,317.

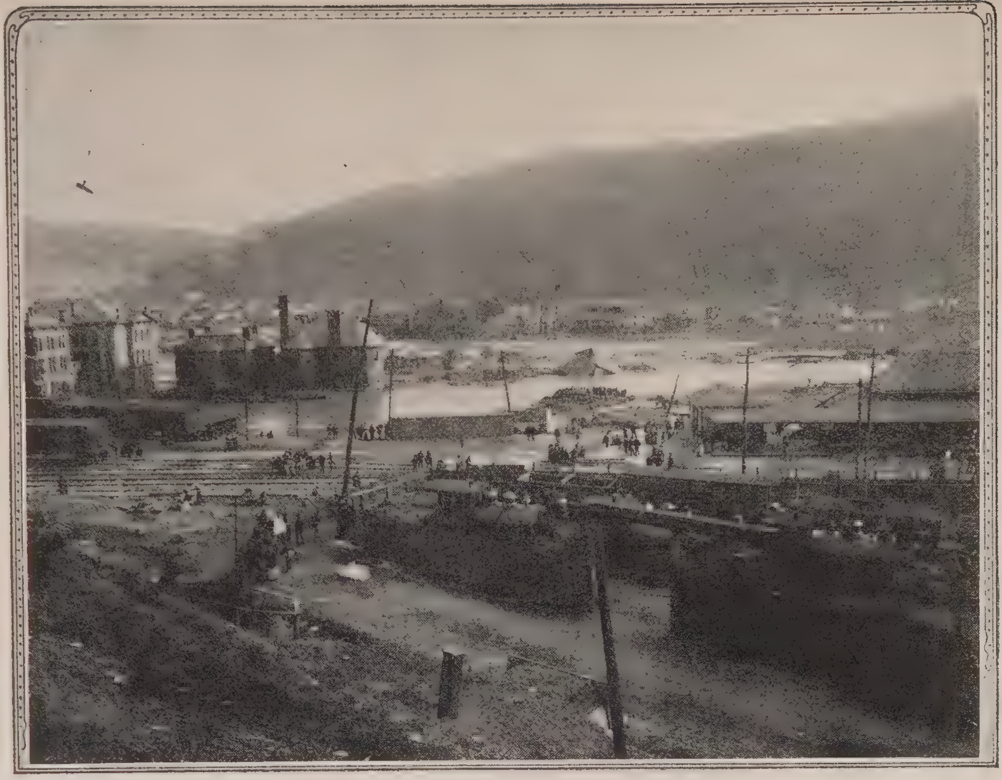
The cities and boroughs in the valley of the West Branch of the Susquehanna river owe their existence to the lumbering operations of early years and to the construction of the West Branch division of the State canal. The lands at the confluence of Bald creek and the West Branch, described in early Clinton county history as "the angle," were granted in 1769 by the Penn proprietary to Dr. Francis Alison, and through a series of later conveyances two hundred acres of the angle came into the ownership of "Jerry" Church, who is regarded as the founder of the city of Lock Haven. In 1833 Church made his purchase and in 1834 laid out a town site giving the place the name of Lock Haven, a name suggested by the "locks" in the canal opposite the town site and by the excellent "haven" for logs in the river at that point. The work of constructing the canal and the long dam across the river was completed in 1833-34.

In 1839 Lock Haven became the seat of justice of the new county of Clinton, in the creation of which Mr. Church was an influential factor. In 1840 (April 25) the borough was incorporated, yet its real growth did not begin until the completion of the great log boom in 1849, when lots are said to have increased to more than double their former value in a single year, and the borough rivalled Williamsport in business importance. The Sunbury and Erie railroad was opened in 1859, and thereafter the growth of the borough in all directions was constant. It became a chartered city March 28, 1870, and since that time has taken rank with important interior municipalities of the State. It is noted chiefly as a railroad and industrial center. In 1880 the population was 5,345, and in 1900 was 7,210.

In the southeast corner of Erie county, on the line of the old Atlantic and Great Western railroad, at a point about equi-distant (as the crow flies) from Erie, Meadville, Titusville and Jamestown (N. Y.) is the flourishing city of Corry, a town unknown half a century ago, and not even noted on the map as a settlement previous to about 1840. Corry—the city derives its name from one of its old families—was a swamp previous to the year mentioned, and owes its existence and prosperity to its location at the junction of several railroad lines, the Erie (formerly A. & G. W.) the Philadelphia and Erie, the Oil Creek and Buffalo, and the Cleveland and Pittsburg roads, all of which, except the Erie, now form a part of the Pennsylvania system. After the discovery of petroleum in Oil creek valley, Corry became a distributing point and subsequently oil refineries were built there. Other industries followed and established the growing city as a business and manufacturing as well as a railroad center. The city charter was granted March 8, 1866. In 1880 the population was 5,277, and in 1900 was 5,369.

On the west bank of Monongahela river, at a settlement then known as Parkinson's Ferry, the chief participants in the notorious "Whiskey Insurrection" held a great public meeting in 1794. At that time, however, the Ferry was not more than a frontier trading post and a convenient point for crossing the river. The name was changed to Williamsport in 1833, and to Monongahela City in 1837, when the borough incorporation was effected. The city charter was granted March 24, 1873.

For more than a century the region in which this little city is planted has held prominent place in the history of Western Pennsylvania, and the development of the natural resources of Washington county has been productive of great good in the industrial history of the State. This advance movement was begun soon after 1830, and has been continued with almost unvarying success to the present time. As early as 1840 the borough contained two glass factories and as many large steam saw mills and carding and cloth mills. In later years the character of manufactures has changed, but all have steadily increased in number



Johnstown

General view of the city after the flood, from the hill opposite the Pennsylvania Railroad station. Engraved especially for this work from a negative by E. D. Bonine

and employing capacity until the city has become planted upon a secure commercial basis. In 1840 the borough contained less than eight hundred inhabitants; in 1880 its population was 2,904, and in 1900 was 5,173.

In addition to the cities the planting of which has been noted, there is another class of municipalities which claim at least passing mention in this chapter. According to the scheme of civil government in this Commonwealth, each county must have its seat of justice, where county buildings are erected, courts are held, and public business affairs are transacted by county officers. It is not essential that any county seat shall be a chartered city, or shall have attained the character of a borough, but it must be conveniently located as near the geographical center as possible and, under the present law, not less than ten miles distant in any direction from the county line. Whatever is written relating to municipalities of this class will be briefly stated.

West Chester[1] was laid out as a town in 1786, and for more than a century has been noted for the refined intelligence of its people, the permanent character of its institutions, clean and healthful surroundings, as well as being the seat of justice (since 1786) of one of three original counties established by Penn in 1682. In 1800 the population of the borough was 374, and in 1900 was 9,524.

Doylestown, the county seat since 1812 of original Bucks county, was laid out and named in 1778. It is known as one of the most orderly and healthful municipalities in Eastern Pennsylvania. In 1840 the population was a little more than 900, and in 1900 was 3,034.

Carlisle, the home of Dickinson college, a widely known institution of the Methodist Episcopal church, and also the seat of a famous Indian school, was laid out in 1751 and became a borough in 1782. This locality abounds in historic reminiscences and the borough itself has been the scene of many important events. Its growth and development have been conservative, yet steady, the population having increased from 3,708 in 1830 to 9,626 in 1900.

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[1] Boroughs are mentioned in the order of seniority of county organization.

Bedford, an old town on the Chambersburg and Pittsburg turnpike, was an important center of trade and travel in days previous to the advent of railroads. The town was laid out in 1766, five years before it became the seat of justice of Bedford county. For several years the borough and Bedford Springs were rival localities, but the county seat always maintained its superiority in point of population and business interests. The population in 1840 was 1,022 and in 1900 was 2,167.

Sunbury, the shire town of Northumberland county, was laid out in 1772, when the county itself was established. As an important point on the Susquehanna river during the Revolution it was the scene of many historic events, and later acquired more material prominence by reason of its commercial advantages and its proximity to the coal producing regions of the State. The population was about 1,000 in 1840, and 9,810 in 1900.

Greensburg, the county town of Westmoreland county—a region noted for its agricultural resources rather than for industrial enterprises—was laid out in 1782, and was incorporated as a borough in 1799. During a century of development it has accumulated a population of 6,508, and is the most populous borough in the county.

Washington, long noted as the largest borough in the county of the same name, the home of Washington college (founded 1806), was laid out in 1782, the year following the creation of the county. At length, however, the county town was compelled to yield its numerical and industrial ascendency to the flourishing town of Monongahela City, which since has been regarded as the county metropolis, while Washington has lost none of its old-time prominence, and now is a prosperous growing borough, a center of culture and wealth. The population in 1840 was more than 2,000, and in 1900 was 7,670.

Uniontown, in Fayette county, was laid out in 1767 by Henry Beeson, a Friend, who came to the locality from Virginia, and in allusion to whom the place for many years was called Beeson's Town. Uniontown became a county seat in 1783. It is pleasantly situated near the center of the county, on the high ridge lands which divide the Monongahela and Youghiogheny rivers, and in a region that abounds in mineral wealth. Madison college was founded here in 1825, having been established as an academy in 1808. The population of the borough in 1840 was 1,710, and in 1900 was 7,344, which growth indicates a healthful increase in all departments of municipal life.

Johnstown

A scene in the residence section after the flood 1889. Reproduced especially for this work from a negative by E. D. Bonine

Chambersburg was laid out as a town in 1764, became a county town twenty years later, and is noted as the scene of many historic events during the French and Indian war, the Revolutionary war, and also during the war of 1861-5. On July 30, 1864, the borough was attacked, plundered and burned by the confederate forces under Gens. Johnston and M'Causland. This was perhaps the most eventful period in Chambersburg history, and one which carried great personal loss into hundreds of homes. But a new borough was soon built up on the ruins of the old town and the place became better and more prosperous than ever before. The region is rich in agricultural and natural resources, and the progressiveness of the people has long been recognized throughout the State. Among the institutions of the vicinity of the county seat is Wilson Female college. Chambersburg contained 2,794 inhabitants in 1830, and 6,877 in 1880. It long ago became entitled to a city charter, but the interests of the people have not demanded a change in municipal government. In 1900 the population was 8,864.

Norristown, the seat of justice of Montgomery county, the largest borough in the State, and withal, an enterprising, growing municipality, was laid out in 1784 and was incorporated as a borough in 1812. It was named for Isaac Norris, who bought the manor lands on which it stands of William Penn, jr., in 1704. During the colonial period and the Revolution which followed, this part of Philadelphia county was historic territory, yet of the events of that period no mention can be made in this place; the best and most interesting history of the borough is that made during the years following the creation of Montgomery county in 1784, and especially during the last century, when the development of resources and the enterprise of individuals has accomplished the splendid work of building up one of the most prosperous and orderly municipalities in the Schuylkill valley. The town is noted for its manufactures, its large business interests, handsome residences and its worthy public institutions. These results have been achieved during the last half century. In 1840 the borough had barely 1,100 population, and its principal factories comprised locomotive works, rolling and nail mill, three cotton mills and a few other industries of less note. The completion of the canal through the valley and the construction of railroads led to the establishment of these interests, and the extension of internal improvements stimulated greater effort on the part of capitalists and eventually made Norristown one of the important centers of manufacture in eastern Pennsylvania. In 1880 the borough population was 13,063 and in 1900 was 22,265.

Huntingdon, in the county of the same name, was laid out as a town and named in 1767, but the locality in its history antedates that event by many years and originally was known as "Standing Stone," the white man's designation of the site of an Indian village on the Juniata at the mouth of Standing Stone creek. Many interesting traditions and memories are associated with the early history of the locality, but this chapter must treat of more modern and material things. The founder of the town was Dr. William Smith, provost of the University of Pennsylvania, a distinguished educator, whose appeals for assistance met generous response from across the Atlantic; and in honor of one of his benefactors, Selina, Countess of Huntingdon, he named the town. The county was created in 1787, and was named for its principal town and seat of justice. The latter became an incorporated borough in 1796. The work of development in this locality had an early beginning, the Huntingdon furnace having been in operation in 1795. In later years new industries were established as rapidly as the means of transportation was provided. In 1840 the town had become an important center of manufacture and trade and many of its citizens had acquired fortunes in business pursuits. These interests in subsequent years have not been suffered to decline, and progress appears to have been the watchword in all generations of the past. In 1840 Huntingdon's population was 1,145; in 1880 was 4,135, and in 1900 was 6,053.

Media, the seat of justice of historic and populous Delaware county, dates its municipal history from the year 1849, and was created in order to satisfy the demand that the county buildings be removed from Chester to some more central location. In 1847 the legislature authorized the removal, subject to the approval of the people at the next election. This was done, and in 1851 the courts and county offices were removed to Media. The borough population in 1880 was 1,919, and in 1900 was 3,075.

Lewistown, the county seat of mountainous Mifflin county, was laid out in 1790, was incorporated in 1811, and became a trade and forwarding center of some consequence before the advent of canals and railroads into the locality. The mining of ores and production of iron gave increased importance in later years and made Lewistown one of the largest boroughs on Juniata river. In 1840 the population was 2,058; in 1880 was 3,222, and in 1900 was 4,451.

Somerset, the shire town of Somerset county, was laid out in 1795 with the organization of the county, and for a time was called Brunnerstown, after its founder, a substantial German. It was incorporated as Somerset borough in 1805, and was reincorporated in 1807. It was destroyed by fire in 1833, and was again visited with a similar disaster in 1872. The town was soon rebuilt, however, and now is a neatly laid out borough of modern style, with a population of 1,834 in 1900.

Waynesburg, in Greene county, was laid out in 1796, and became a borough in 1816. The town was named in honor of Gen. Anthony Wayne, the hero of Stony Point, one of the most famous Indian fighters of his time. For many years it has been known as the seat of learning and comfort, and the founding of Waynesburg College in 1851 was only a deserved recognition of the refined quality of its citizenship. The population in 1900 was 2,544.

Honesdale, so named in honor of Philip Hone, who was one of the chief promoters of the Delaware and Hudson canal in this part of the State, was laid out in 1826, and was the direct result of the enterprise just mentioned. Previous to that time the town site was a swampy wilderness, but the operations of the company stimulated action to such an extent that the little hamlet became a borough in 1831, and a county seat in 1842, when the Wayne county public officials were removed there from Bethany. Since that time the history of Honesdale has been a record of constant progress in the pursuits of trade and manufacture. In 1840 the population was 1,086; in 1880 was 2,620, and in 1900 was 2,864.

Wreck of Day Express

Above Johnstown after the flood, 1889. Engraved especially for this work from a negative by E. D. Bonine, taken the day after the water subsided

Kittanning, on the east bank of Allegheny river, in the center of the rich iron and coal producing fields of Armstrong county, of which it is the county seat, was laid out in 1804, and was incorporated in 1821. It is known as one of the most pleasantly located boroughs in the Allegheny valley contiguous to Pittsburg, being distant from that city about fifty miles. In 1840 Kittanning contained 700 inhabitants, and in 1900 the number had increased to 3,902, from which it is seen that its growth has been slow and steady during the last sixty years.

Gettysburg, the county seat of Adams county, is described by an early writer as "a neat and well built town, situated on elevated ground, at the intersection of several important turnpike roads, and surrounded by a delightful and well-cultivated country." This description applied to Gettysburg of the first half of the Nineteenth Century, when it was not more than a well ordered and comfortable county seat, with two noteworthy institutions of learning—the Southern Theological seminary and Pennsylvania college, the former founded in 1825 and the latter in 1832. In the early part of the last half of the century just mentioned Gettysburg became the scene of one of the most remarkable events in American history; an event which caused the name of the quiet inland town to be known throughout the world, and one which has been made the subject of numerous publications in this country and in Europe. The "Battle of Gettysburg" July 1-3, 1863, had the effect to dwarf into insignificance all the interesting history of the town in earlier years and to open a new era in its civil and domestic life. In fact, in the magnitude of one great event it seems to have been forgotten that Gettysburg once formed a part of the original district known as "the Manor of Mask," established by the proprietary government in 1740, and that previous thereto settlements had been made in the locality. The town itself was founded and laid out in 1787 by James Gettys, from whom its name is derived. It became a county seat in 1800, and was incorporated as a borough in 1807. Its earliest institutions of note were the Theological seminary, and the Pennsylvania college, while the turnpikes to York, Chambersburg, Baltimore, Hagerstown and elsewhere added to its early importance and gave the town considerable prominence in the region many years before Lee's confederate army invaded Pennsylvania territory. In 1840 the town's population was 1,908, and in 1900 was 3,495.

Butler, shire town of Butler county, located in the rich oil fields of western Pennsylvania, was laid out in 1803 on lands donated for public purposes by John and Samuel Cunningham. A few log houses were on the site when the commissioners located the county buildings, but the growth of the little hamlet was so rapid in the next few years that in 1817 Butler was incorporated as a borough. Both before and after this time the inhabitants were chiefly devoted to lumbering and agricultural pursuits. About 1870 certain interested persons made a discovery of oil in the vicinity, and the little county seat at once became noted as a center of oil production and operations, and its growth in subsequent years was remarkable. The increased population and business importance so quickly acquired were made permanent by the construction of three lines of railroad, which centered in Butler and which have been factors for good in its history. In 1830 the borough population was 580, and in 1900 had increased to 10,853.

Beaver, in Beaver county, at the point where Beaver river empties into the Ohio, dates its history from the year 1791, when, under authority of the legislature, the town was directed to be laid out "on or near the ground where the old French town stood," and where, also, in 1778 Fort McIntosh was built. Thus it is seen that the pretty little county seat occupies historic ground, a strategic point for early military operations, although the peaceful arts of agriculture, manufacture and trade have been the pursuits of its people since the days of the Revolution. The borough was incorporated in 1802 and attracted but little attention until an enterprising company began the work of utilizing the waters of Beaver river for manufacturing purposes. The construction of a canal, and still later a railroad, stimulated still greater efforts in the same direction, and soon the region on both sides of the river for several miles was resolved into a manufacturing district. All these enterprises contributed to the prosperity of Beaver proper, but in addition to its commercial advantages, it has long been known as a borough of fine homes, of wealth and refinement, and the seat of notable institutions of learning. In 1840 its population was 550, and in 1900 was 2,348.

Bellefonte, seat of justice of Centre county, one of the most healthful inland boroughs of the State, was laid out as a town in 1795 and became a county seat five years later. It is situated on the eastern slope of Bald Eagle mountains, on elevated rolling lands, and long has been noted for healthful surroundings and picturesque landscapes. The production of iron ore and the establishment of various mills for iron manufactures have given the town and county an especial prominence in the industrial world and contributed materially to local prosperity. The borough was incorporated in 1806, and was reincorporated with enlarged boundaries in 1814. Its population in 1840 was 1,032, and in 1900 was 4,216. The Pennsylvania State college, incorporated in 1854 as "The Agricultural College of Pennsylvania," is located in College township, twelve miles southwest of Bellefonte.

Mercer, the pretty little county seat of Mercer county, was laid out in 1803 on lands donated for that purpose by John Hoge. In the central portion of a productive agricultural region, the borough has gained some prominence as a convenient trading place, and while not without industries its people make no especial claim in that direction. In 1890 the borough's population was 1,804.

Warren, the county seat of Warren county, one of the most interesting and beautifully situated towns in Western Pennsylvania, was laid out in 1795 in connection with the operations of the Holland land company, although the questionable policy of the company with regard to land sales delayed settlement until about 1800, when the county was created. For many years afterward Warren was a center of extensive lumbering operations in the region bordering on Conewango creek and the Allegheny river. This was the principal industry until the heavy timber growths were cut away and fine farm lands were opened for successful cultivation. In the meantime the county town had enjoyed a continuous growth and became an incorporated borough in 1832. Its history, however, was uneventful until the discovery of oil in the locality, which suddenly transformed the quiet borough into a bustling city with a mixed population of speculators, operators and drillers. This period of excitement continued twenty or more years and contributed largely to local progress; and when it was passed the drifting elements sought other fields, leaving that which was most desirable in municipal life—increased wealth and substantial business interests. In 1840 the borough population was 737, and in 1880

Johnstown

Another residence scene. From a negative by Rau was 2,810. The greatest growth in population, due to the establishment of new interests, came between 1890 and 1900, the number of inhabitants having increased from 4,332 in the former year to 8,043 in the latter.

Indiana, the county seat of Indiana county, was laid out in 1805, and became a borough in 1816, soon after the region had begun to attract attention on account of its salt producing qualities. The growth of the county seat in later years was quite slow until the construction of a branch railroad in 1854 and the still later erection of the State Normal school building, which at the time was the largest structure of its kind in Pennsylvania. In 1840 the population was 674, and in 1900 was 4,142.

Brookville, the seat of justice of Jefferson county, was laid out in 1830, by commissioners appointed by the governor for the purpose of locating the county buildings. The site was chosen because of its pleasant situation at the junction of Sandy Lick and North Fork creeks, on the line of the old Susquehanna and Waterford turnpike. The town was planted in a heavily timbered section and soon became a center of trade. Its growth was slow, the total population being less than three hundred in 1840. Later on, however, the opening of the "low grade" division of the Allegheny railroad through the town resulted in increased business and population. Now Brookville is an attractive borough of 2,472 (census of 1900) inhabitants, and has gained some prominence as an industrial center. It became an incorporated borough in 1843.

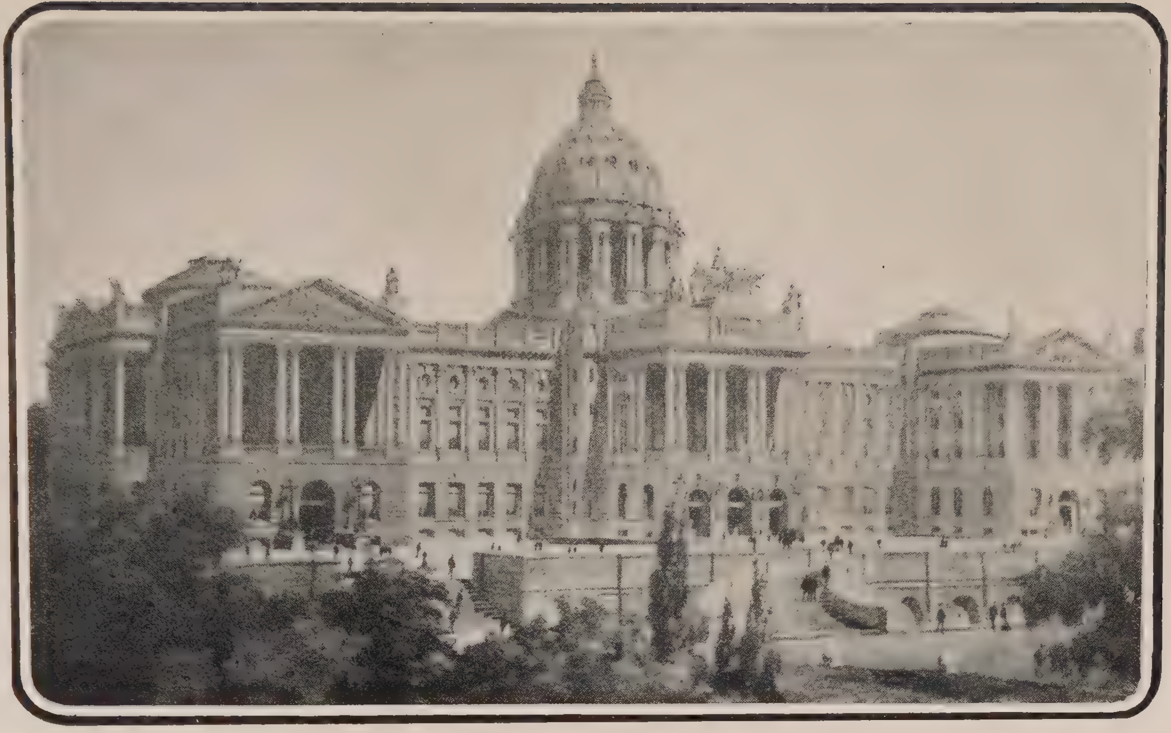
Smethport, in McKean county, was laid out in 1807, but owing to adverse conditions no permanent settlement was made until 1822, and the county itself was not organized until 1826. Even then the public buildings were erected in a densely wooded region where lumbering and litigation are said to have been the chief pursuits of the people for several years. But at length this formative period passed away and Smethport became a flourishing town in a lumber district, with a good academic school and a printing office among its most prominent institutions. Its subsequent growth in population has been moderate, the number of inhabitants in 1900 being 1,704. Naturally, the larger enterprises of this region have been attracted to Bradford, both on account of its size and better transportation facilities.

Coudersport, the seat of justice of Potter county, an attractive borough with good public buildings, diversified business interests and comfortable homes, is located on the upper waters of Allegheny river in a portion of the State which previous to about fifty years ago was thickly covered with heavy timber growths. The town was planted in 1807, and for many years was noted for its lumber trade, but with the gradual clearing away of the forests excellent farms were opened and the people devoted their energies to agricultural pursuits, and also to manufacturing, as the resources of the locality would permit. The town was laid out in 1807, and during the early years of its history received many favors from John Keating, an extensive land owner. The subsequent life of the borough has been accompanied with few vicissitudes, and to-day it is regarded as one of the flourishing municipalities on the northern border of the State. The population in 1880 was 667, and in 1900 was 3,217.

Wellsboro, by some writers of early Tioga county history called Wellsborough, was laid out as a county town in 1806 and began its civil history with assurance of future prosperity. However, soon afterward there arose a clamor for the removal of the county buildings, with the townships of Tioga and Cowanesque engaged in a contest for the coveted designation and in consequence Wellsboro was suffered to decline in interests and population. In 1835 the controversy was ended, the county seat remained in its original township, and new public buildings were authorized to be erected. It is said that the original name of the township from which Wellsboro was incorporated as a borough was Vir-Del-Mar, and was so called in allusion to the States of Virginia, Delaware and Maryland and that in 1808 the name was changed to Delmar township. Wellsboro was named in honor of Mary Wells, wife of Benjamin W. Morris and sister of Gideon Wells, who were among the first settlers in that vicinity. The more recent history of Wellsboro has been uneventful. The borough was incorporated in 1830. In 1840 the population was less than 400, and in 1900 was 2,954.

Ebensburg, the seat of justice of Cambria county, was laid out in 1804 on lands owned by Rev. Lees Lloyd, who named the town after his son Eben, and gave to the commissioners the site on which the county buildings were erected. The early settlers in this locality were largely Welsh, noted for thrift, sobriety, and industry. They had previously laid out a town about two miles southwest of the site of Ebensburg, and when the latter was plotted they abandoned their own settlement in favor of the new one. The borough was incorporated in 1825. The population in 1840 was 353, and in 1900 was 1,574.

Clearfield, on the site of the old Indian town of Chinclacamoose, was laid out as the county seat of Clearfield county in 1805, and derives its name, as does the county, from the cleared fields found in the vicinity by the earliest settlers. The pioneers here were largely of Scotch-Irish descent, with a small contingent of Germans, and a few New England Yankees who were attracted to the locality by the splendid timber lands for which the upper West Branch valley was noted. From the time the town was founded down to about 1855 lumbering was the principal occupation of the people, and after the vast forest growths had been removed the lands were developed into excellent farms. Still later, the discovery of bituminous coal gave rise to a new industry, and contributed far more to the town's advancement than its former lumbering interests. Thus has Clearfield been benefited by the development of the natural resources of the region. For more than half a century it has been known as a prosperous town, and one which has furnished several strong characters in the civil and political history of the State. The borough was incorpo-



New State Capitol

Reproduced especially for this work from plans
of Joseph M. Huston

rated in 1840, at which time its population was 306. In 1900 the inhabitants numbered 5,081 (including West Clearfield which was annexed in 1890).

Towanda, the shire town of Bradford county, is second in point of population among the three busy little municipalities (Sayre, Athens, and Towanda) which through their diversity of interests have added so much to the wealth and prominence of the upper Susquehanna valley in this State. It was laid out as a town in 1812, but whether it should be called Williamstown, Meansville (after its founder, William Means), or by its present name, was for several years a subject of warm discussion. However, in 1828, the act of borough incorporation declared in favor of Towanda. Throughout the period of its history Towanda has been a growing town, the results of a succession of important local interests; first, lumbering; second, hard and soft coal mining; and third, manufacturing and railroad enterprise. In 1840 the town's population was less than one thousand; in 1900 the inhabitants numbered 4,663.

Montrose, in Susquehanna county, was laid out and became a county town in 1811. It is a delightfully located borough, and enjoys prominence as a center of trade in one of the most productive agricultural counties of Pennsylvania. The borough was incorporated in 1824. In 1830 its population was 450, and in 1890 was 1,827.

Pottsville, in Schuylkill county, was laid out as a county town in 1816, but its early history dates back to the colonial period. Soon after the Revolution the region became well settled through the energetic efforts of land speculators, and while Pottsville was planted in connection with these operations, its real growth did not begin until about 1825. Within the next ten years it became an important point for coal mining and shipping and naturally developed into a manufacturing town. Its early growth was remarkable, the inhabitants numbering 2,424 in 1830, and 4,345 in 1840. The town enjoys the distinction of having been one of the first places (if not the first) to use anthracite coal in making iron, and it is also claimed that the first T rails made in this State were the product of the Haywood & Snyder mills in Pottsville. In 1900 the borough had attained a population of 15,710, and ranks fourth among the municipalities of its class in the State.

Bloomsburg, on Fishing creek, about one mile distant from the Susquehanna river, was laid out as a town in 1802 by Ludwig Eyer. Between the town and the river is the site of an old Shawanese village, whose occupants were still there when pioneer James McClure made his settlement in 1772. In 1781 a fort was built on the land. In 1840 Bloomsburg had acquired considerable population and was described by a writer of that period as a "large, well-built, and growing town," on the North Branch canal, with a number of factories and other business interests. About this time an attempt was made to secure the removal of the county buildings from Danville to Bloomsburg, which was unsuccessful, but which was finally accomplished in 1846. In 1869 the town became an educational center by the completion of the State Normal school buildings. The population in 1900 was 6,170.

Lewisburg, the county seat of Union county, was laid out in 1785 by Ludwig Derr, the pioneer, who set up a trading post and furnished the Indians with powder and tobacco and rum in exchange for peltries. Here, too, in earlier years was the temporary abode of Capt. John Brady during the period of Indian troubles. However, under the developing hand of the white man, the town made its best history. It continued to grow, and the original name of Derrstown was changed to Lewisburg. About this time the settlement took from New Berlin the county buildings and became the county seat. Then followed the public improvement that gave the town water communication between the river and the West Branch canal and made it a shipping point of considerable note. In 1848 a movement was begun which resulted in the founding of the University of Lewisburg, a notable institution and an important factor in the subsequent life of the town. In

1840 the population of Lewisburg was 1,220, and in 1900 had increased to 3,457.

Milford, on Delaware river in Pike county, was settled in 1779, laid out as a town in 1800, became a county seat in 1814, and an incorporated borough in 1874. The population in 1880 was 983, and in 1900 was 884.

New Bloomfield, in the Mahanoy valley in Perry county, was laid out in 1822, its site being in a field of clover in full bloom; hence the name of the town—Bloomfield. The postoffice name, which is most frequently used, is New Bloomfield. The town became a county seat in 1824, and began its history as such upon the removal of the public offices and documents from Landisfield in 1827. In 1900 the population was 772.

Mifflintown, the pretty little county seat of Juniata county, was laid out by John Harris in 1791, and was named Mifflin in honor of Thomas Mifflin, the president of the Supreme Executive Council of the Commonwealth. The town is centrally located on Juniata river, about midway between the mountain ranges that form the east and west boundaries of the county. It became a seat of justice on the creation of Juniata county in 1831, and in 1833 was incorporated as a borough. In 1871 the place was almost wholly destroyed by fire, but was soon rebuilt. The population in 1900 was 953.

Stroudsburg, the county seat of Monroe county, was laid out in 1806 by Daniel Stroud, whose father, Colonel Jacob Stroud, settled there soon after the close of the last French and Indian war. The town is pleasantly situated near where several streams unite, and by reason of its attractive appearance and surroundings has frequently been likened to a "pretty New England village." Stroudsburg became a county seat in 1836, and in later years, with the acquisition of three lines of railroad, became a center of considerable traffic and trade, while its natural beauty has brought it many summer tourists. Its population in 1840 was 407, and in 1900 had increased to 3,450.

Clarion, in Clarion county, was laid out in 1839 for the express purpose of becoming a county seat. Previous to that year the site was covered with pine timber and a dense undergrowth of brush, but at the end of two years the town's population was 800, and an act of borough incorporation was passed by the legislature. During the sixty years of its history Clarion has shown a healthful growth, and now, with its county properties, business interests, fine houses, the noted Carrier seminary, and more than two thousand inhabitants, is regarded as a prosperous inland town.

Tunkhannock was laid out as a town under the name of Putnam in 1790, and was so called in allusion to General Israel Putnam, the Revolutionary hero, who owned lands in this locality at an early day. The town is planted on the east bank of Susquehanna river, in a region rich in events of early history. Later on it became noted for extensive lumber interests, and still later as a productive farming town. Tunkhannock became a county seat in 1842 and an incorporated borough in 1872. The population in 1900 was 1,305.

Mauch Chunk (Mok-Chunk), the county seat of Carbon county, was laid out in 1815, became a seat of justice in 1843, and a borough in 1853. In this locality the refugee Mohegan Indians made their home after they had been driven from New England territory, and here they were found by the Moravian missionaries about 1746. Permanent white occupancy, however, did not begin until many years later, and the town owes its founding to the construction of the Lehigh Navigation company's canal, and the mining and shipping of coal which followed its completion. Later on it became an important railroad point. The borough is pleasantly situated on Lehigh river, and contained 4,029 inhabitants in 1900.

Ridgway, county seat of Elk county and its oldest town, was laid out in 1843, and was named for John Jacob Ridgway, a large land owner and lumberman, and one of the colony of New Yorkers and New Englanders who began operations in the locality about 1835. The town was founded for county seat purposes, and now is noted as a center of lumber trade. The population in 1900 was 3,515.

Hollidaysburg, seat of justice of Blair county, was laid out in 1820, and was named for William and Adam Holliday, who settled there in 1768. For several years this place was the head of canal navigation in the region, and thereby gained early prominence. It became a county seat in 1846. The population in 1900 was 2,998.

Laporte, county seat of Sullivan county, one of the smallest municipalities in the State, was laid out in 1850, and was incorporated in 1853. Its location in the county is central, and on elevated land, the altitude above tide water being nearly nineteen hundred feet. The population in 1900 was 442.

Tionesta as laid out and incorporated as a borough of Venango county in 1852, and in 1866 the seat of justice of Forest county, the latter originally having been a lumbering region and afterward an oil and gas producing district of considerable note. The borough population in 1900 was 815.

McConnellsburg, county seat of Fulton county, was laid out in 1786 on lands then owned by William and Daniel McConnell. It became a borough in 1814, and then was known as McConnellstown. It became a county seat in 1850. The population in 1840 was 486, and in 1900 was 576.

Danville, the seat of justice of Montour county, is numbered among the older towns of the Susquehanna valley, having been laid out in 1790. It was at first the county seat of Columbia county, and derived its earliest importance from the extensive iron manufacturing plants started soon after the completion of a part of the Sunbury, Danville and Pottsville railroad. These early industries were afterward increased in number and capacity and in subsequent years Danville became noted for its manufactures. It became the county seat of Montour county in 1850.

The State hospital was founded there in 1868. The population in 1840 was about 8,000, and in 1900 was 8,042.

Middleburg, the county seat of Snyder county, was laid out in 1800, when the township of which it was a part was one of the minor divisions of Northumberland county. It became a seat of justice in 1855. The population in 1900 was 573.

Emporium, the county seat of Cameron county, was laid out in 1861, and was incorporated in 1866. Its population in 1900 was 2,463, being more than one-third of the county's total population at that time.

It is also proper in this chapter that some brief allusion be made to the larger municipalities[1] of the State which are neither cities nor county seats.

Shenandoah, first in point of population among the numerous towns of Schuylkill county, owes its existence wholly to the development of the coal mining resources for which the region is noted. The town was planted less than thirty years ago, and has made rapid strides in the accumulation of population, the number of inhabitants being 2,951 in 1870; 10,147 in 1880; 15,944 in 1890; and 20,321 in 1900.

Shamokin, in Northumberland county, was laid out in 1835 as a part of a coal mining enterprise of the Shamokin Coal company, and owes its importance to subsequent operations in the same direction carried on by other proprietors and companies. It is the most populous borough in the county, having 18,202 inhabitants in 1900. Shamokin was once the abiding place of a considerable body of Indians, and to the early missionaries was known as "Shaumokin." Count Zinzendorf, Conard Weiser and others visited the place in 1745, and in the same year Rev. David Brainerd labored earnestly but with discouraging results for the conversion of the Indians.

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[1] Only towns having more than 5,000 population in 1900 are mentioned in this connection.

Braddock, a busy center of iron manufacture, belongs to the Pittsburg group of municipalities which have sprung into prominence during the last thirty years. This town, however, has an interesting early history, and was named for General Braddock, an officer of the English army who met disastrous defeat on the borough site during the French and English war in 1755. But the modern town of Braddock is devoted to industrial pursuits, and now is filled with an army of wage earners rather than armed soldiers. In 1880 the population was 3,310, and in 1900 was 15,654.

Pottstown, second in size among the towns of Montgomery county, was laid out in 1752 by John Potts, for whom it was named, and was incorporated as a borough in 1815. It derives importance from the number and magnitude of its industries, excellent railroad facilities, healthful surroundings and notable institutions. The population in 1900 was 13,696.

Plymouth, now third in rank among the populous coal producing towns of old Luzerne county, was deemed of little consequence half a century ago, and was referred to by a writer of local history in 1840 as "a pleasant village on the high bank of the Susquehanna river, beyond the flats." The original name of the place was Shawneetown, indicating its early Indian occupancy. The modern Plymouth owes its existence and prosperity to the production of coal in the vicinity, and in this respect it stands in the front rank of mining towns in the anthracite region. In 1880 its population was 6,065, and in 1900 as 13,649.

Mahanoy City, a flourishing mining town in Schuylkill county, was founded soon after 1850, and began to show evidences of municipal life about twenty years later. In 1880 the population was 7,181, and in 1900 had increased to 13,504.

South Bethlehem, on the site of the "Moravian farms," settled by the missionary colony soon after 1741, was laid out as a town under the name of Augusta soon after the discovery of extensive beds of zinc ores, in 1845. In 1853 the Lehigh Zinc company began operations and soon built up a flourishing settlement which took the name of South Bethlehem, and was incorporated as a borough in 1865. Two years before this the Bethlehem Iron company had established its works in the town, from which time South Bethlehem dates its most progressive history. In subsequent years one industry after another has added to the wealth and population, until the town has taken rank with the foremost manufacturing centers of the State. Just south of the borough stands Lehigh University, one of the notable educational institutions of the State, and which has been a factor for good in local annals. In 1880 the borough population was 4,925, and in 1900 had increased to 13,241.

Mt. Carmel, in Northumberland county, is distinctly the outgrowth of the development of mining resources in the rich coal fields of the region, and became an incorporated borough in 1870. The population in 1880 was 2,378, and in 1900 was 13,179.

Dunmore, in Lackawanna county, is a flourishing town of mining and industrial prominence, being regarded in some respects a desirable suburb of Scranton. In 1880 the population was 5,151 and in 1900 was 12,583.

Homestead, in Allegheny county, is an industrial borough of wide fame and forms a part of the great Pittsburg manufacturing district. The town is of recent creation, having been organized from part of Mifflin township since 1880. In that year the population was 592, and in 1900 was 12,554.

Columbia, in Lancaster county, second in population and business importance in the county, was settled in 1726 by a number of representative Quaker families, who left Chester and established themselves on the Susquehanna river a few miles west of Lancaster. However, the town itself was founded and laid out by Samuel Wright in 1787. In the same year, according to Lancaster county history, Columbia was seriously considered as site of the permanent seat of the National government, the measure therefor having been defeated in Congress by a single vote. During the early years of the last century Columbia became a town of some consequence, and was a convenient crossing place on the Susquehanna on the usual route of travel between the eastern and western parts of the State. Later on canals and railroads were built, which in connection with river traffic established a business center. In this respect in subsequent years the borough has lost none of its old-time importance and now is regarded as one of the best localities for manufacturing in that part of the State. The act of borough incorporation was passed in 1814. In 1830 the population was 2,046, and in 1900 was 12,316.

Nanticoke, in Luzerne county, dates its history from about 1870, when mining operations on a large scale were begun there. In 1880 the town's population was 2,884, and in 1900 had increased to 12,116.

Steelton, in Dauphin county, on the Susquehanna just below Harrisburg, is noted for its manufactures, especially in iron and steel products, and was founded as a hamlet and postoffice under the name of Steel Works in 1866. The locality at one time was known as Baldwin. Steelton had a population of 2,447 in 1880, and 12,086 in 1900.

Wilkinsburg, in Allegheny county, was a hamlet of little consequence in the Pittsburg district previous to 1878, but in later years it has developed into a borough of more than ordinary note. The town was planted about the date first mentioned, and has increased rapidly both in population and industrial importance. It was originally a part of Wilkins township, from which the borough name is derived. The population in 1880 was 1,529, and in 1900 was 11,886.

Beaver Falls, the largest and most important borough in Beaver county, dates its history from 1802, when David Hoopes & Co. built its first mills and factory on the site. In 1806 the town was laid out under the name of Brighton, and was so called until about 1831, when the old name of the locality—Beaver Falls—was adopted. For a full hundred years the town has been noted for its manufactures, but the greatest advances in industrial pursuits have been made within the last twenty years. In 1840 the town had hardly more than 300 inhabitants, and in 1880 the number was 5,104. The population of the borough in 1900 was 10,054.

DuBois, the most populous town in Clearfield county, has sprung into active municipal life within the last twenty years, and owes its existence largely to the operations begun something more than a quarter of a century ago by John DuBois, a lumberman from New York State. He built one of the largest saw mills then known in the region, and on the site where his principal works were erected in old Sandy township a flourishing municipality has since been built. The saw mills now have given way to other industries, and the town enjoys special benefit from the bituminous coal products of the locality. In 1880 the population of DuBois was 2,718, and in 1900 was 9,375.

Phoenixville, in Chester county, derives its importance from manufactures, and was founded as a town about 1810, when the waters of French creek were first used for mill purposes. In 1900 the population was 9,136.

Duquesne, in Allegheny county, is the historic name of a flourishing modern borough in the Pittsburg manufacturing district. The population in 1900 was 9,036.

Sharon, in Mercer county, a country village previous to about 1836, owes its founding and subsequent prosperity to the construction of the Pennsylvania canal and the development of coal lands. The population in 1900 was 8,916.

Carnegie, in Allegheny county, was founded less than ten years ago in connection with the outspreading of Pittsburg manufacturing interests. The borough was named in honor of Andrew Carnegie, manufacturer and philanthropist. The population in 1900 was 7,330.

Bethlehem, in Northampton county, the home of the Moravians since 1741, the seat of noted institutions and domestic contentment for many years, is now a prosperous center of trade and industry. The town is rich in history and the sources of material wealth, and in the development of the latter has increased from a population of less than 1,000 in 1830 to 7,293 in 1900.

Tamaqua, in Schuylkill county, was brought into existence through the development of anthracite coal tracts, and dates its best history from about 1860. The population in 1900 was 7,267.

Bristol, in Bucks county, the second incorporated borough in the State, and the first county seat of Bucks county, was laid out on lands granted by Governor Andros, of the province of New York, who assumed to exercise authority over the territory of this part of Pennsylvania. The borough was chartered in 1720, and was re-chartered in 1785. Although many changes have been wrought in Bristol during the last half century, and particularly during the last score of years, the borough still retains many of its old time buildings and institutions, and to the student of history offers numerous subjects of investigation. Nevertheless the town is, and for many years has been, progressive, and with increasing population and modern methods it has taken rank with the best municipalities of the same class in the State. The population in 1810 was 511, in 1840 was 1,438, and in 1900 was 7,104.

According to the census of 1900 there were eleven incorporated boroughs in this State whose population was less than 7,000 and more than 6,000. Of these Bloomsburg, Greensburg and Huntingdon, county seats, have been mentioned; the others may be grouped and mentioned briefly.

Sharpsburg, Millvale, McKees Rocks, and North Braddock are flourishing municipalities of Allegheny county, within the radius of the great industrial district which has gained such wide fame throughout the land. New Brighton is a busy center of manufacture on Beaver river, and dates its history from the early years of the last century, and its material progress from about

1830. Ashland, in Schuylkill county, is in a locality noted for coal products, and first came into prominence soon after 1860. Olyphant, in Lackawanna county, is a growing borough in a rich coal producing region and has sprung into existence since 1865. Milton, in Northumberland county, was laid out in 1792, became an incorporated borough in 1817, and is chiefly noted for its manufactures and worthy public institutions.

The census of 1900 credits Pennsylvania with twenty cities and boroughs of more than 5,000 and less than 6,000 inhabitants. Corry and Monongahela, cities, and Clearfield, a county seat, in this class of municipalities are already noted.

Charleroi, on the Monongahela river, in Washington county, has come into municipal life within the last ten years, having previously formed a part of Fallowfield township. Jeannette is the largest of several boroughs in Westmoreland county, and was incorporated in 1889. Tyrone, in Blair county, was laid out soon after 1849, and took its name from the iron works in the vicinity of old Tyrone Forges. The borough derived early importance as a lumbering center, later as a railroad town, and finally as a seat of manufactures and coal mining interests. West Pittston, Freeland and Edwardsville are important boroughs of Luzerne county, in the heart of the anthracite region, and are of comparatively recent origin. Conshohocken became a borough in 1850, and for more than sixty years has been an important center of trade and manufacture. The town was founded as a result of the improvements accomplished by the old Schuylkill Navigation company. Coatesville, in Chester county, owes its existence to the utilization of the water power on the west branch of the Brandywine in that locality, which resulted in building up a prosperous town. The borough was incorporated in 1867. Old Forge and Archbald, in Lackawanna county, are borough incorporations of recent years, the natural result of mining operations in the anthracite region. Middletown, the oldest town in Dauphin county, was laid out in 1755 and incorporated as a borough in 1828. It gained early importance as a station on the line of the Union and Pennsylvania canals and the Harrisburg and Lancaster railroad, and acquired additional population in 1857 by the absorption of Portsmouth. It is a seat of education and many industries. Tarentum, in the Pittsburg group of manufacturing boroughs, dates its history to about 1860, and since has shown rapid development. Waynesboro, an industrial municipality in Franklin county, was laid out as Waynesburg about 1800, and became a borough under its present name in 1818. Etna is an iron manufacturing borough in Allegheny county about five miles above Pittsburg. Hanover, in the southwest part of York county, was founded in 1764, and was incorporated as a borough in 1815. Its first settlers were Germans. Kane, in McKean county, was established as a railroad town and later became a center of oil operations and manufacture. Sayre, in Bradford county, near the New York line, is a railroad and manufacturing town of much importance.

In the present connection it may be stated that Pennsylvania in 1900 contained twenty-five boroughs having more than 4,000 and less than 5,000 inhabitants, and forty boroughs of more than 3,000 and less than 4,000 inhabitants. Many of them were founded as towns during the first half of the last century, and a few were of still earlier origin; but the greater part of the entire number have been brought into active municipal life within the last fifty years, and were planted as a result of the great work of development of natural resources in the the State.

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